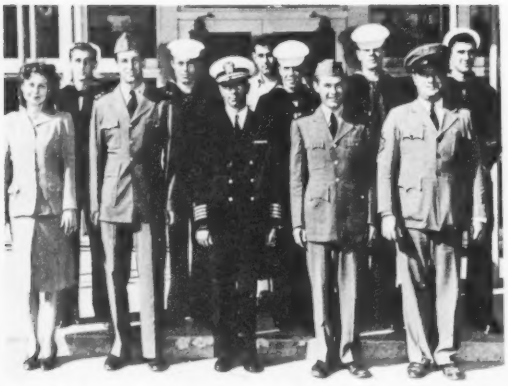
NAVY CIVIL ENGINEER

1945 1975

ON THE COVER



THAT'S THE WAY IT WAS — Circa 1946, when Capt. Robert E. Bassler, CEC, USN (center) posed with his staff upon relocation of the Civil Engineer Corps Officers School from its Davisville, R. I. site to its present campus at the Construction Battalion Center, Port Hueneme, Calif. CECOS observes its 30th anniversary this year, and its story is told on pages 4-7.

TODAY'S LIVING TRADEMARK — Capt. Olin L. Dixon, III, CEC, USN (left) present commanding officer of the Naval School, Civil Engineer Corps Officers (CECOS) with a few members of his staff portraying the basic subjects of school's curriculum: Seabee operations, contract administration, public works, special assignments and management. CECOS is an element of the Naval Technical Training Command.

NAVY CIVIL ENGINEER

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IN THIS ISSUE

CECOS Has Its 30th Year 4
Unsigned

Super-light Fill Developed 8
By Roy Gurnham

Housing As Incentive 9
By Yates Boswell

Labor And Management In NAVFAC 10
By Harry D. Wicklund

Turning Over Another New Leaf In Grounds Care 12
By CDR Roy L. Allen, CEC, USN, and LCDR Donald L. Loof, CEC, USN

Radiological Training Begun 14
Unsigned

Energy Use Survey Planned 14
By Paul W. Wilcoxon

Book Review 15
By T. C. Murphy

On Advice of Counsel 15
By W. H. Speck

Saving Energy At NOD Crane 16
By CDR Norm Cervenka, CEC, USN, and Larry L. Cullop

Warranty: A Contract's Cutting Edge 18
By Paul Buonaccorsi

CEL-CEC-Seabee — A Partnership In Progress 22
By Jerome Thomas

Port Hueneme's Sea(Bee) Cadets 24
Unsigned

Refuge At Grand Island 26
Unsigned

The Red Hill Tanks 28
By H. G. Lasser

Taming A Tempest 29
Unsigned

The CECOS Reading Program 30
Unsigned

Readers Survey 31

Rickover Hall, USNA 33
By LCDR Dennis F. McCahill, CEC, USN

NAVFAC Situation Report 35
By Headquarters Staff

Toward Cleaner Harbors 37
By L. M. Wernigg

A Home For Heritage 38
By Tom Harris

Stack Sampling In Kentucky 40
By Dale Bratcher

Public Works Technical Notes 41

Afield And Afishin' At Meridian 45
By Keith D. Lange and William E. Frazier

Speaking From Topside 46
By RADM A. W. Walton, Jr.

NOW HEAR THIS!

ALL HANDS Attention Is Invited To The Readers Survey Contained On Page 31 Of This Issue Participation Of All Readers Is Urged

PLEASE SUBMIT READERS SURVEY PRIOR TO 15 AUGUST 1975

Naval School,

around the navy world known best as

Observes its

May 1, 1945, wasn't an 'ordinary' day for the faculty and students of the newly formed U.S. Naval Civil Engineer Corps Officers School at Davisville, R. I.

The formal establishment of the new instruction unit as a Navy School had resulted in the merging of the Officers Training School of Davisville (which had been earlier established in 1942 at Camp Peary, near Williamsburg, Va.) and the Public Works School formed in 1943 at the Naval Operating Base, Norfolk, Va.

The Civil Engineer Corps now had a formal school at one location and with one administrative authority. Named as Officer-In-Charge was Captain R. E. Bassler, who had a complement of 105 officers and 194 enlisted personnel to assist in the operation of the school dubbed "CECOS." The four instruction departments were: public works, construction battalions, midshipmen, and indoctrination.

Aside from the busyness of the establishment day, May 1 was still not an ordinary day inasmuch as most minds were preoccupied with the imminent collapse of Nazi Germany. (One week following the schools establishment, May 8, 1945, VE Day was proclaimed.)

Victory in Europe, although joyfully acclaimed, meant little to the school's mission of training more and more Civil Engineer Corps officers to staff the Naval Construction Battalions and other construction efforts needed in the Pacific Theatre of Operations.

Granted, massive air attacks on the Japanese Islands were commonplace; the Japanese bastion of Okinawa was soon to fall and the Japanese Navy had been shattered in the historic naval victories of the Pacific Fleet; but the proven battle fanaticism of the Japanese Forces which was underway on Okinawa forecast that total unconditional surrender would come only after a bloody and forceful occupation of the Japanese home islands. Top military strategists projected the price of such an assault at 1 million Allied casualties and the consumption of two to three years.

CECOS was created to furnish a steady flow of competent construction engineers for the final effort of World War II and proceeded with the mechanics of class organization, quota control, curricula development, logistic support and the dozens of requisites of operation.

Mid-July 1945 found CECOS underway with the first scheduled classes settled down to a more-or-less routine. Because of the projected demands of the Japanese conquest, enrollment was peaked with a steady flow of newly commissioned CEC officers, experienced officers rescheduled for refresher training in new duties and special courses in military government and transportation and logistics.

However, July 16, 1945, found an untested "ultimate" weapon proven on an isolated desert in New Mexico. The atomic bomb was then unleashed on the Japanese cities of Hiroshima (August 6) and Nagasaki (August 9) with the total Japanese surrender announced on August 14, 1945, and formalized

GUNG HO — Seabee battalion operations demand field military training by expert staff instructors and an assist from the U. S. Marine Corps. The Naval Mobile Construction Battalions (NMCB) are commanded and staffed by Civil Engineer Corps officers.

Civil Engineer Corps Officers

Thirtieth Anniversary.

in Tokyo Bay on September 2, 1945.

CECOS was established, but its staff and enrollment all but vanished following the rapid demobilization of the armed forces after the cataclysmic end of World War II.

In rapid sequence, CECOS, although maintaining its training courses, fell from its original complement to 15 officers, a handful of enlisted personnel and three score civilian employees.

CECOS COMMANDING OFFICERS

CAPT. ROBERT E. BASSLER	1945-1946
CAPT. ALEXANDER S. C. WADSWORTH	AUG.-DEC. 1946
CDR. BOYD S. BROOKS	DEC. 46-SEP. 49
CAPT. JAMES S. MARSH	1949-1951
CDR. HARRY C. WILLS	1951-1953
CDR. ERNEST L. EUSTIS, JR.	1953-1954
CAPT. FRANCIS T. PRITCHARD	1954-1956
CDR. TOM W. BECK	MAR.-OCT. 1956
CAPT. RALPH C. JENSEN	1956-1960
CAPT. MARK H. JORDAN	1960-1963
CAPT. LOUIS N. SAUNDERS, JR.	1963-1966
CAPT. JOHN F. BEAVER	1966-1969
CAPT. EUGENE L. PICKETT	1970-1971
CAPT. CHARLES M. HOWE	1971-1974
CAPT. OLIN L. DIXON III	1974-1975*

*CAPT. DIXON, PRESENT COMMANDING OFFICER OF CECOS, IS SCHEDULED TO ASSUME COMMAND OF THE CONSTRUCTION BATTALION CENTER, PORT HUENEME, CALIF., IN LATE AUGUST. HE WILL BE SUCCEEDED IN THE CECOS COMMAND POST BY CAPT. LEROY D. LAWSON, CURRENTLY ASSISTANT COMMANDER FOR FAMILY HOUSING, HEADQUARTERS, NAVAL FACILITIES ENGINEERING COMMAND.

With a final class of 15 officers graduating, the school was relocated from its Davisville site to its present campus located on the Construction Battalion Center, Port Hueneme, Calif.

CECOS and its predecessor training units had responded well with responsive, innovative and professional instruction. The Civil Engineer Corps, a mere 159 officers in 1940, had grown to a peak of 10,186 at the close of WWII. Of these, an estimated 85% had attended the CEC instructional units.

The Civil Engineer Corps had itself become firmly established as a naval entity with command precedence and authority during the war years, not just as a technical staff group, which had been its prior posture.

In March of 1947, although CECOS was busily engaged in training programs for the thousands of Reserve officers produced by WWII, its active duty classes were small, and consequently the staff fell to four officers, four civilian instructors, and a military/civilian mix of nine support personnel.

The school curriculum was reorganized — again, responsive, innovative and professional to the needs of the post-war era.

However, around the historical corner, *waited Korea . . . and Southeast Asia.*

The school, since its inception, has responded accordion-like to the Navy's needs during military operations — World War II, Korea and Southeast Asia — with the faculty and facilities expanded to fulfill officer needs.

The period immediately following WWII could have been rather static for the school had the sponsor and staff chosen. However, in 1949 CECOS in-

THE CHIEF of Naval Technical Training, Rear Admiral Albert M. Sackett, USN, (left) peruses a copy of the recently published **Southeast Asia: Building The Bases,** presented him as an anniversary memento by the commanding officer of CECOS, Capt. O. L. Dixon, III, CEC, USN (right).

THE BOOK PARADE starts for Equipment Operator First Class Larry L. Facer as he receives a volume from Librarian Barbara Horn of the Moreell Library of CECOS. The reference facility is named for Admiral Ben Moreell, CEC, USN (Retired), founder of the Navy Seabees, and houses his personal papers and documents.

NEW FACES to the Civil Engineer Corps, Lt. James A. Rispoli, a transfer from the U.S. Air Force, and Lt. Guy R. Bafus, a former submariner, inspect a copy of **The Navy Civil Engineer** which is produced at CECOS for the Naval Facilities Engineering Command and under the supervision of the commanding officer.

novated a new course of instruction in disaster relief engineering which encompassed both thermonuclear and natural calamities.

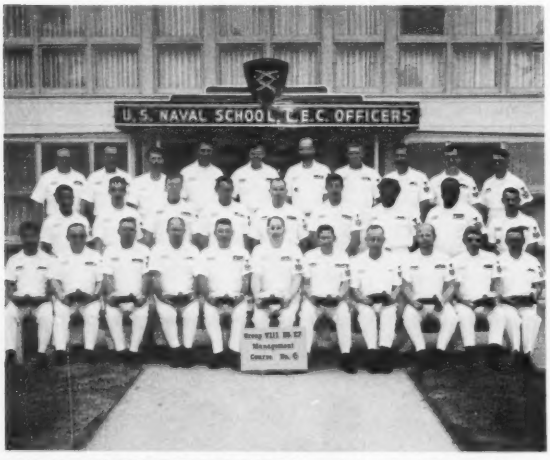
The course, a logical innovation for the atomic age, was the first of its kind offered in a U. S. military service school and did much to firmly establish CECOS. The attendance of officers representative of all of the armed forces, plus many of friendly foreign nations and students from other governmental agencies attested to the wide acceptance of the curriculum. Because of this interest a special course was introduced for senior foreign officers which was broadened to include all of the essentials of naval shore establishment construction and maintenance.

Another course, that expanded the scope of CECOS was the introduction in 1968 of a six week course of instruction for senior and master chief petty officers (E-8, E-9). The instruction was designed to assist these veteran enlisted men to fill the important middle management roles in naval construction administration. The course was enthusiastically received by the students, and at their recommendation was later extended to include lower echelon petty officers, E-6s and E-7s.

Today, CECOS is an element of the Naval Technical Training Command, whose chief is Rear Admiral Albert M. Sackett, USN, headquartered at Memphis, Tenn. The CECOS sponsor remains the Naval Facilities Engineering Command (NAVFAC) whose needs in worldwide naval installation construction and maintenance and those of the Civil Engineer Corps officers are translated by the training command into the CECOS curriculum.

The current CECOS courses offered include:

Civil Engineer Corps Officers, Basic Course (8 weeks) designed to orient



CECOS, AN OFFICERS' SCHOOL, and that includes **petty officers,** too. A typical class of Group VIII (Seabee) ratings in current attendance in the E6/E7 management course. Designed to develop first level managers in the operating forces, the class is similar to the highly successful E8/E9 course designed for senior chief petty officers.

BASIC OFFICERS CLASS NO. 135, most recent graduating group (June 6), is also typical of CECOS' prime mission — orientation and specialized training for recently commissioned Civil Engineer Corps officers. Outstanding graduates were Warrant Officer H. S. Jones (back row, first left) and LTJG Thomas H. Buckman (front row, fourth from right) and Ens. Lewis H. Brower, (front row, second from right).

the newly commissioned CEC officer and prepare him for his first duty assignment. Midway in the instruction he is guided to one of several specialties determined by his initial assignment. These include public works management, contract administration, or construction battalion operations.

Public Works Management (4 weeks) prepares the student for duty assignment in a public works department as an assistant public works officer, an activity liaison officer or a staff civil engineer.

Contract Administration (4 weeks) enables the student to fill a post as an assistant resident officer in charge of construction or as a staff contracting officer.

Construction Battalion Operations (4 weeks) equips the new CEC officer for his assignment with a Naval Mobile Construction Battalion (Seabees) and stresses field military engineering and troop leadership.

Other courses of lesser duration include: shore facilities planning, navy industrial fund, network analysis for construction projects, economic analysis, construction contract negotiators, and the aforementioned chief petty officer management courses. Accelerated courses in some of the major areas of study are offered for reserve personnel or as refresher type courses for officers of longer tenure.

Meeting contemporary domestic problems CECOS has designed a three day course in energy management which provides the student with conservation techniques and a more efficient use of energy sources. The same is true in a similar class in environmental protection which outlines policies and actions to prevent pollution and damage in areas either under or adjacent to Navy control.

CECOS, marking its 30th year, so continues to explore, recommend and design additional courses that will enrich the professional skills and knowledge of the Navy's Civil Engineer Corps. (*Please refer to page 30*)

Persons interested in the complete curriculum of CECOS and the prerequisites for attendance are invited to write the Academic Director, Code C20, Naval School Civil Engineer Corps Officers, Port Hueneme, Calif., 93043.

CUT UPS — Ens. Ellen Freihofer and Capt. Dixon cut the CECOS anniversary cake at an informal school gathering. Ens. Freihofer, one of two CEC women officers on active duty, is to be assigned to Sewell's Point, Norfolk, Va.

AN ACCOLADE — A 23-year veteran of the CECOS faculty, Ted C. Murphy receives the Navy Superior Civilian Service Award from Capt. Dixon. The award initiated by Capt. Dixon's predecessor, Capt. C. M. Howe, recognizes Murphy's outstanding contribution to CECOS. Murphy has announced retirement plans for December 1975.

OL' GRADS never fade away, as Richard C. Minasian attests, with receipt of a memento from Capt. Dixon. Minasian, a graduate of Class No. 1 of CECOS, during WWII days at Davisville, R. I., was also a CECOS faculty member for 20 years.

PROFESSOR
MANAGEMENT STUDIES

The Navy Civil Engineer Corps Officers School invites applications for an individual who will write and teach short courses in Applied Organization and Management to military professionals, most of whom are graduate engineers.

Requirements include B.A., M.A., in appropriate degree fields; 6 years teaching experience (college level); background in behavioral sciences, U.S. business and labor institutions; demonstrated ability to conceive programs of study (lecture/seminar/workshop/project) adaptable to occupational demands of students.

Starting salary (GS-1712-12) $18,463; periodic increases to $23,998. This position is in the Federal Career Civil Service.

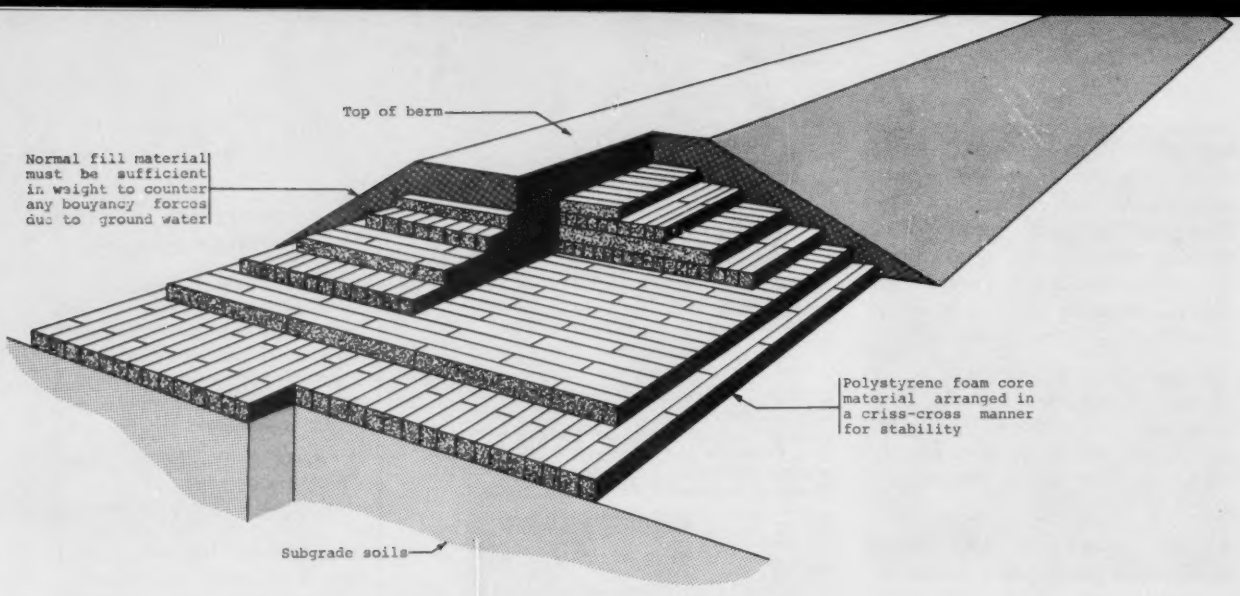
The school is located on the Pacific Coast approximately midway between Santa Barbara and Greater Los Angeles. Free from metropolitan congestion and pollution the immediate area offers versatile recreation in an envied climate. Yet, cultural, educational and entertainment attractions of Los Angeles and Santa Barbara are within an hour's drive.

Freedom Knowledge Action
CECOS
U.S. NAVAL SCHOOL CIVIL ENGINEER CORPS OFFICERS

Comprehensive position description and application form (SF171) available from Commanding Officer, Naval School, Civil Engineer Corps Officers, Port Hueneme, CA 93043. Telephone: (805)982-5655.

Send signed form 171 to Civilian Personnel Office, Naval Construction Battalion Center, Port Hueneme, California (Reference: CECOS 5985) by 15 July 1975.

An Equal Opportunity Employer.


Top of berm
Normal fill material must be sufficient in weight to counter any bouyancy forces due to ground water
Polystyrene foam core material arranged in a criss-cross manner for stability
Subgrade soils

TYPICAL CROSS-SECTION OF LIGHTWEIGHT BERM

Super-light fill developed

By ROY GURNHAM, P.E.
Civil Design, CHESDIV

• Alexandria, Va.

Another method has been developed to deal with the unique problems of building earth-fill structures over unstable soils.

In the past, whenever a berm, embankment or other earth-fill structure was built, serious problems and delays resulted if subsurface soils proved unstable. Normal methods of building over a poor foundation include excavation, soil stabilization and floatation. However, these methods have not always proven satisfactory.

The new method uses lightweight extruded polystyrene foam as a substitute for materials normally used in earth-fill structures.

The critical factor in earth structures is the total downward force a poor foundation soil will have to bear. By using extruded polystyrene foam as a core in these structures weight is substantially reduced.

The significant feature of this concept is that the foam is used for weight reduction in the fill material and not as a replacement for unstable, subsurface soil. The advantage is that an earth structure may be built over soils where conventional construction methods cannot be used either because of their high cost or impracticability.

Sand drains, for example, are very costly and may be sheared off when soil consolidates, ending their effectiveness. Surcharging, often used with sand drains, is a time-consuming procedure.

Also, if soils to be consolidated are too deep, time needed for consolidation may be prohibitive.

Although polystyrene foam is expensive compared to fill materials normally used (up to seven times as costly), savings may be realized because of reduced excavation and stabilization costs.

Extruded polystyrene is durable, having only petroleum-based liquids and direct sunlight as its natural "enemies." When used in road construction, a polyethylene sheeting should be placed over the foam for protection against petroleum spills.

In other installations, a foot thick earth cover will shield against the sun's rays. The foam itself is able to withstand loadings up to 80 p.s.i. and weighs only three pounds per cubic foot.

This is the key to its use. Other foam types may be used but they do not have all the advantages of extruded block polystyrene foam. For example, cast-in-place foam requires formwork and weighs slightly more than extruded foam. Also, foam blocks of pressed polystyrene beads do not have the strength of extruded foam.

The advantages of polystyrene foam can best be shown by comparing its use with each of the established practices for building structures over unsuitable soils. The first of these, excacation of unsuitable materials, is only economical if the unsuitable soils are relatively shallow.

Excavation costs become excessive below six to eight feet and shoring must be provided if the unsatisfactory soils extend beyond the limits of the proposed excavation. Once the unsuitable soils have been removed, they are replaced with suitable materials and construction of the earth berm or embankment may start. Expense is incurred also in providing and placing suitable replacement materials.

Use of polystyrene foam allows construction to take place directly over the unstable foundation soils without excavation.

The second existing construction method is stabilization. Stabilization of subsurface soils can sometimes be accomplished by compaction, that is, vibroflotation for loose granular soils; surcharging, or preconsolidation of compressible soils; and by injection of a chemical stabilizor.

Usually the area to be treated is larger than the limits of the proposed project and this increases costs. None of these processes are economically feasible in areas where the unstable soils are widespread or deep.

Landfill (Cont.)

Polystyrene foam allows a structure to be so lightweight the bearing capacity of subsurface soils is not exceeded and conventional construction methods need not be used.

Finally, the flotation method of construction is based on the theoretical concept that regardless of the specific supportive strength of a given soil, any area of that soil will support a structure equivalent to the weight of soil excavated from that area.

This complex method is best suited for buildings and not for the construction of large earth-filled type structures.

The foam concept is now being used in the design of a sewage treatment lagoon at the Naval Surface Weapons Center, Dahlgren, Va. Subsurface soils there consist of an upper stratum of silty clays with varying percentages of fibrous organics, and a second stratum of very soft organic clays and silts with standard penetration values of zero to one blow-foot.

Since the second layer is up to 50 feet deep, none of the conventional methods of berm construction were considered feasible. The new method of using polystyrene foam will allow construction of a pond berm light enough for the unstable soils to support.

Poor soil conditions are common to many Navy facilities and, in the past, poor site conditions have prevented construction of some earth-fill structures. It is anticipated this new concept will provide a means of using more of these previously unacceptable locations.

Housing as incentive

By YATES BOSWELL
Assistant Division Director, Personnel
Support Facilities Construction Division, NAVFACENGCOM

With the re-establishment of an all voluntary service, the Navy has taken an indepth look at where they have been and where they are going in making the Navy an attractive career.

It was apparent that improved personnel living conditions with emphasis on adequate family housing was one of the key factors in career considerations and is of prime importance in personnel retention.

As the Navy and Marine Corps design and construction administrator, the Naval Facilities Engineering Command has long considered family housing to be one of its most visual and vital programs.

Since 1970, Navy has placed some 15,800 housing units under contract at various locations within the continental United States and overseas at an estimated cost of $422 million. Family housing construction programs for FY73 and 74 were the Navy's largest with some 6,800 units scheduled for construction at an estimated cost of $200 million.

The FY75 Military Construction Program appears to be the last major year for housing construction with new authorizations tapering off during the next several years.

Upon completion of the 1978 program the Navy and Marine Corps will have some 92,775 public quarters and 13,361 rental units in its housing inventory which is considered to be sufficient to assure, with community support, availability of adequate housing for all eligible Navy personnel.

With the drastic reduction in new housing construction, future emphasis will be on improving existing housing units by alterations and providing new and modern equipment. Existing serviceable but older dwelling units will be modernized and brought to the level of adequacy desired.

The most practical tool the Navy has to obtain good quality, first-class housing, during the recent period of rapid inflation, has been a contractural method known as "Turnkey," a one-step negotiated procurement procedure.

Recognizing that the expertise of the housing industry would be of great benefit in assisting the Navy in obtaining good housing at reasonable cost, Navy took the lead in the development of "Turnkey" procurement and considers the results of this method to be the major reason for the current tri-service success in executing their housing programs.

At the present time 80 percent of the services' family housing construction programs are scheduled to be acquired by this procurement method.

The Naval Facilities Engineering Command considers that through the combined efforts of the Headquarters and their Field Divisions, they have succeeded in providing, within authorized dollars, the best housing possible for Navy and Marine Corps families throughout the world. The photo accompanying this article is of housing units recently completed at a Navy and Marine Corps installation. These units are typical of those being built at all locations and are constructed of materials and are of an architectural quality highly comparable to similarly priced civilian housing in the same areas.

Construction of these houses and improvement of older existing units will provide a major incentive for present and future Navy and Marine Corps men and women to make the service their career.

Navy housing — These contemporary two, three, and four bedroom duplex two-story homes are part of 150 units built at Great Lakes, Ill., for enlisted personnel under the 1971 family housing program.

Labor and Management in NAVFAC

By HARRY D. WICKLUND
Personnel Services Officer
Headquarters, NAVFAC

• Alexandria, Va.

Recent changes in the federal service labor-management program contained in the new executive order signed by President Ford offer a timely opportunity to assess union-management relations within our NAVFAC family.

How is the program working? Has it benefited employes and employers? Where have we been; where are we now; and where are we going in this rapidly expanding labor relations program?

In recommending to President Ford the changes in the new Labor Relations Executive Order, effective this May, the Federal Labor Relations Council stated progress has been made in operations under Executive Order 11491.

"In many ways," said the council, "the order is functioning smoothly." Within NAVFAC we are seeing distinct signs the program is working quite well.

NAVFAC managers have become better managers — more understanding of the workforce, better equipped to solve every-day problems in the workplace, and assuming a more effective leadership role.

Achievement of our NAVFAC mission has been improved by employe participation in making and using personnel policies and practices affecting their employment.

Most eligible employes of public works and construction battalion centers are represented by unions. The first exclusive recognition was granted a union in September, 1962, to represent a unit of wage grade employes at PWC Norfolk, Virginia.

This recognition was granted under President Kennedy's Executive Order 10988, effective in 1962.

PWC Norfolk employes then negotiated one of the first collective bargaining agreements in the Navy Department. Agreements followed and, currently, the parties again are negotiating at PWC Norfolk.

Union organization and exclusive recognition under Executive Order 10988 followed at PWC Pearl Harbor, PWC Pensacola, PWC Great Lakes, PWC Guam, PWC San Diego, CBC Gulfport and CBC Port Hueneme. Since January, 1970, the effective date of President Nixon's Labor Relations Executive Order 11491, other bargaining units have been established throughout the command for which exclusive recognition has been granted to unions.

Today, almost 10,000 NAVFAC employes are represented by unions and are under collective bargaining agreements.

In comparison with many other Navy commands, a greater percentage of eligible NAVFAC employes have chosen union representation. Long before the formal union recognition program began in 1962, it was traditional that craftsmen at navy public works centers and departments joined unions.

It is not surprising, then, that NAVFAC employes sought, at an early stage, exclusive recognition providing for real collective bargaining. In some cases such recognition was granted before blue collar workers' unions got exclusive recognition at several naval shipyards, where employes were joining labor unions before the turn of this century.

At public works centers there are 14 bargaining units, each represented by a union. This includes PWC Subic Bay and PWC Yokosuka, where Filipino and Japanese

employes are represented by unions in those countries, and are under foreign national union bargaining agreements.

Several PWCs have two units — one for graded employes, the other for the ungraded; while others have activity-wide units. PWC Pearl Harbor has four units. Now, all PWC employes are covered under bargaining agreements except one unit in which negotiations are under way for an initial agreement.

At our new Public Works Center, San Francisco Bay, the matter of union recognition and representation has not yet been determined. When formed, the employes and function of several Navy, Army and Air Force public works departments were transferred to PWC San Francisco Bay.

Employes transferred were in a total of 12 bargaining units all under union contract, and nine local unions were involved. A petition was filled with the Department of Labor seeking determination for a single, activity-wide unit for representation of employes by the union of their choice.

On Feb. 11 this year, a long hearing ended on positions taken by the Navy and various unions involved. The Assistant Secretary of Labor for Labor-Management Relations will make the decision on the unit question, and will probably order a secret-ballot election to determine which union, if any, the PWC San Francisco Bay employes wish to represent them.

Throughout the command at construction battalion centers, engineering field divisions and public works centers, there are 23 bargaining units, and 17 collective bargaining agreements. In some cases, the parties engaged in multi-unit bargaining and combined two or more units under one agreement.

At CBC, Port Hueneme, Calif., for example, three bargaining units are covered under one contract. Bargaining is unique at PWC Guam in that the center's contract with the union was negotiated at the same time and place as several other Navy activities on Guam negotiated their contracts with that union.

Unions that represent NAVFAC employes are the National Association of Government Employes; American Federation of Government Employes, AFL-CIO; Metal Trades Councils of the Metal Trades Department, AFL-CIO; International Association of Machinist and Aerospace Workers, AFL-CIO; and National Federation of Federal Employes.

Why have so many employes chosen representation by unions? For answers we turned to the labor relations advisors for our command and received some forthright and interesting observations.

From the past history of collective bargaining for organized NAVFAC employes, from the positions of the parties — employes and management — taken on countless issues at NAVFAC bargaining tables, and from careful examination of the attitudes and objectives of many NAVFAC employes who represent unions; the following observations were made:

— By far, NAVFAC employes' major desires seem to have been to engage in the concept of bilateralism and collective bargaining with the opportunity to participate in making and using personnel policies and practices affecting their employment; and to have the guarantees and protections offered by a current bargaining agreement at all times.

Now, let's take a look at the other side of the bargaining table — management! Are NAVFAC managers and activity heads accepting the meaning and intent of the changing federal labor-management program? Are they giving full credence to and applying the concept of bilateralism and collective bargaining? Are they sensitive to legitimate employe needs and concerns and do they take prompt action to correct and improve situations within their discretion of management authority? What do the labor relations experts say about our managers?

The answers are affirmative! The majority of civilian and military managers at NAVFAC activities have fully accepted and are successfully applying the program of bilateralism and collective bargaining. Typical of NAVFAC management is the attitude expressed in some notes written by a CEC officer following union negotiations at a PWC in which he participated as management's chief negotiator:

> "I feel that a positive attitude toward the union must be evident and not in a token form, but sincerely felt. By positive attitude, I would say that management must recognize that both union and management are interested in the employes of the organization and are trying to represent their best interests. Union and management must work together if an organization is to achieve a high degree of effectiveness in today's business world."

Our managers are making the program work as intended and all parties are gaining from the relationship. There are fewer union disputes at NAVFAC activities requiring a third party settlement than at activities of other major commands.

There are also fewer impassses at the bargaining tables. These factors hold great promise for the future of the labor-management relationship in the NAVFAC family regardless of the changes to come.

What it all adds up to is that although we are highly organized, we have learned from the past how to make the program work in the present and future. We know that both parties — NAVFAC employes and NAVFAC management — reached a state of maturity early in this business of labor relations.

We know the parties have built a relationship of mutual trust and undertanding. And we know if both union and management continue this problem-solving relationship, with the kind of full undertanding of each other's position as in the past, the future looks good.

Where do we go from here? Will changes in the program through Executive Order 11838 have great impact at NAVFAC activities? They probably will! More matters may be subject to collective bargaining.

Our grievance procedures may have to be changed. We may find the locus of bargaining changed from the present system. But if the common denominator remains the same — our good relationship — both NAVFAC management and NAVFAC unions will find areas of mutual benefit in these and future changes in the program.

TURNING OVER ANOTHER NEW LEAF IN GROUNDS CARE

By CDR ROY L. ALLEN, CEC, USN
and
LCDR DONALD L. LOOFF, CEC, USN
NAS Whidbey Island

• Oak Harbor, Wash.

Many Naval activities are confronted with the problem of how best to maintain grounds. Shrinking budgets and reduced manpower have forced public works departments to use their dwindling resources for more mission-oriented maintenance tasks.

As a result, good grounds care has suffered.

Of necessity, grounds care responsibilities have been parceled out to other station departments and tenant commands for their areas. Shaggy grounds have been the inevitable result.

Usually, a major all-hands effort is required to pick up and trim grounds just before any VIP visit.

Naval Air Station, Whidbey Island has been no exception and was in a very receptive mood when approached by a local contractor who employed severely handicapped people. The contractor, New Leaf, had contracts for cemetery grounds care and enjoyed a good reputation for the fine manicured look achieved on the grounds they maintained in Sedro-Wooley, Burlington, Allen, and Mount Vernon, Wash.

Under the Wagner-O'Day Act of 1938, the Federal Government set a special priority for the purchase of certain products made by organizations employing blind people. In June, 1971, Congress amended that act to create a Committee for Purchase of Products and Services of the Blind and other Severely Handicapped.

The amendment extended coverage of the act to other severely handicapped persons and broadened its scope to include services as well as commodities.

The terms 'other severely handicapped' and 'severely handicapped individuals' mean an individual or class of individuals under a physical or mental disability, other than blindness, which according to criteria established by the committee, "constitutes a substantial handicap to employment and is of such a nature as to prevent the individual under such disability from currently engaging in normal competitive employment."

The committee is charged with determining which commodities and services are suitable for government purchase from workshops serving the blind or other severly handicapped. Under the revised Wagner-O'Day Act, these people are afforded priority, second only to the Federal Prisons Industries, in providing products and services to the Federal Government.

All commodities and services approved by the committee for provision to the government by blind or other severely handicapped workshops are included in the procurement list which is published annually and amended periodically.

In the past, procurement activities dealt only with National Industries for the Blind, representing blind workshops, in implementing the act. With the expansion to include other severely handicapped people, the committee designated six more central nonprofit agencies to represent the severely handicapped.

These agencies are: Goodwill Industries of America, International Association of Rehabilitation Facilities, Jewish Occupational Council, National Association for Retarded Children, National Easter Seal Society for Crippled Children and Adults, and United Cerebral Palsy Association.

In order to qualify under the Wagner-O'Day program, workshops are required to submit their articles of incorporation and other documents to the committee for review and approval. On approval, the sponsoring central nonprofit agency is provided written notification indicating the workshop qualifies for participation in the Wagner-O'Day program.

Representatives of National Industries for the Blind and the six agencies serving other severely handicapped, as well as officials from their workshops, will be contacting procurement activities requesting information on items they are considering for provision to the Government.

Information desired will usually be related to the procurement history of such commodities or services (former and current contractors, quantities, bid and contract prices

and requirements forecast data normally made available to commercial sources).

Because of the newness of the amendment to the act, New Leaf approached Naval Air Station, Whidbey Island, Public Works Department directly. Newness also created other hurdles: Armed Services Procurement Regulations had not yet been revised to set up necessary procedures, New Leaf was not yet on the Federal Register, and no similar prior contract existed for Naval Air Station, Whidbey Island.

As a result, it became necessary to coordinate directly with the Committee and other high ranking Navy officials in Washington, D.C., tasked with getting a pilot program started.

But the intent of this article is not to relate the difficulties experienced getting this first-of-its-kind contract for the Navy, but to point out it has been done and has been a great success at the Naval Air Station, Whidbey Island.

Some of the reasons for this success are:

- Lower cost, using handicapped personnel at a lower wage.
- The positive, "Let's do it right" attitude of New Leaf managers. We observed the individuals helping severely handicapped persons to afford them a chance to pay their own way and improve their self image were a completely different type of person than the normal, profit-oriented, service contractor.
- Establishing a single line of communication between the contractor field foreman and the Public Works Department Maintenance Control Division (Planner-Estimator) to resolve day-to-day problems.
- Shedding of grounds care responsibilities by station departments and tenant activities.

Under the contract in force in calendar year 1974, the New Leaf organization brought between eight and ten severely handicapped workers aboard Whidbey Island Naval Air Station to perform grounds care.

These workers were paid by New Leaf from the contracted amount — $59,411.56 — to mow, trim, and edge, virtually all large lawn areas around station buildings. Workers also maintained flower beds on station.

New Leaf bought or leased all necessary equipment and provided housing and transportation for their workers from the contract amount.

Whidbey Island Naval Air Station provided two offices for New Leaf. Two were needed as the station is made up of two separate facilities: Ault Field and the Seaplane Base. The station also provided telephone service for New Leaf and a shed for equipment storage.

New Leaf's work is outstanding. Grounds are kept neatly trimmed and maintained through the growing season and military personnel are freed from the task of providing care for their own grounds.

This is a real benefit in the case of some of the technical support organizations where the only personnel available to maintain lawns are E-7 and above.

The basic planning steps for a Navy station interested in procuring grounds maintenance service under the Wagner-O'Day Act are as follows:

— Determine if such services are available locally. This can be done by contacting the Executive Director, Committee for Purchase from the Blind or other Severely Handicapped, Suite 610, 2009 Fourteenth Street, North Arlington, Va., 22201.

— Obtain sample copies of similar contracts from appropriate NAVFAC Field Divisions or other activities that have contracts with firms hiring the severely handicapped.

— Tailor past contracts or write new ones to suit the needs of the station.

— Obtain wage determination under the Service Contract Act from the Department of Labor for 100 percent capable employes the government would normally hire for the same work.

— Meet representatives of the firm providing the desired services, give them a copy of the proposed contract, and negotiate their price.

(Note: Local firms can submit price proposals directly to the committee, bypassing local negotiation. It is in the interest of both parties, however, to agree first on a price before submitting proposals to the committee for approval. During negotiation, the firm should be advised final approval must first be obtained from NAVFAC before a contract can be negotiated.)

— Get authority from NAVFAC through the local field division to execute a contract for the pre-negotiated amount.

— Send copies of the contract and agreed price to the appropriate central non-profit agency designated to represent the severely handicapped in your area.

— Sign the contract.

Radiological Training Begun

• Ft Belvoir, Va.

In June, 1974, the OIC, Naval Nuclear Power Unit (NNPU) was tasked by Commander, Naval Facilities Engineering Command (NAVFAC), with providing radiological training within the U. S. Navy. The Radiological Training Department (RTD) was established in July, 1974, with the addition of two Medical Service Corps instructor billets from the Chief of Naval Education and Training.

The initial training effort was directed toward the radium removal operations program for inactive Naval vessels. Responsibility for this course was transferred to NNPU following the decommissioning of the Navy Training Unit, Fort McClellan, Ala. The need was established when it was found that many luminescent devices aboard decommissioned ships contained radium in quantities considered excessive and potentially dangerous.

These devices must be removed and properly disposed of prior to transfer of the vessel. The radium removal operations course is designed to enable inactive fleet maintenance personnel to safely locate, remove, and dispose of radioactive materials found aboard inactive ships. Three such courses were conducted in July and August of 1974 with 48 students becoming certified as radium removal operators.

A parallel radium removal course for active ships was then designed in an effort to remove items containing radium from the active fleet and replace them with non-hazardous substitutes. Shore based teams of maintenance support personnel have been trained as radium removal operators in an effort to prevent the additional work load from being assigned to shipboard personnel.

Removal and disposal procedures are, therefore, centralized in major home ports where they can be more easily monitored and controlled. Commanding officers can schedule surveys for their ships by submitting a standard work request to the Fleet Maintenance Assistance Group located in their home port.

The surveys will then be conducted during a convenient in-port period. To date, one course has been conducted on each coast, and radium removal teams are now established in Norfolk, Charleston, Mayport, San Diego, San Francisco, and Pearl Harbor.

Training department personnel have recently completed a nuclear weapons radiological survey operations course which will enable personnel to conduct radiological surveys in weapons storage areas in ships or shore facilities.. Students will learn how to evaluate survey data and determine what actions are necessary in order to ensure current personnel radiation protection standards are met. Classes began in April, 1975, with training being conducted at the Nuclear Weapons Training Groups in Norfolk, Va. and San Diego, Calif.

Future plans include development of a radiation safety officer (RSO) course which will meet training requirements for individuals filling RSO billets throughout the Navy. The Course will be approximately two weeks in length and will cover a wide range of subjects including the detection of ionizing radiation, personnel protection measures, the development of standard operating procedures including those for X and gamma ray radiography, and rules and regulations pertaining to radiation sources licensed by the Nuclear Regulatory Commission.

Energy Use Survey Planned

By PAUL W. WILCOXON
Energy and Utilities Division, NAVFAC

• Alexandria, Va.

The Chief of Naval Material, acting to implement the policies of the Department of Defense, has directed the Naval Facilities Engineering Command to immediately survey energy conservation efforts of all Navy shore activities. NAVFAC's objective is to provide technical guidance and assistance to help the activities achieve the consumption reduction goals imposed in the federal energy conservation program and to limit adverse effects which could impair continued adequate fleet support.

Survey teams from NAVFAC's engineering field divisions will visit each of the shore activities within their area by summers end. The teams will conduct energy information seminars at each site and alert responsible personnel to the current energy situation, its associated problems and remedial actions being taken. The teams' basic objectives will be to help the activities identify, evaluate and develop specific programs and actions to reduce energy consumption on a continuing basis. They will further help the activities to develop contingency plans to cope with future fuel shortages, and help them prepare repair and military construction projects for phased implementation over a five year period.

These efforts alone will not be enough to meet the demands of the long term energy shortage with which the Navy will have to cope. Ultimately, it will be necessary to develop more comprehensive conservation programs and more efficient energy systems, utilizing less of those sources of energy that are becoming critically short and increasingly expensive. Research and development programs and pilot programs are being studied for future implementation. However, it is anticipated that these immediate and near-term energy conservation programs will enable shore activities to meet their fleet support responsibilities, despite the reduced energy consumption requirements.

ON ADVICE OF COUNSEL

By WILLIAM H. SPECK
Counsel
HQNAVFAC

". . . a page of history is worth a volume of logic"
— Oliver Wendell Holmes, Jr.

Freedom of Information Act amendments effective on 19 February 1975 culminate twenty-five years of increasingly tougher obligations to disclose government records. For a hundred years, a "house-keeping statute" empowered department heads to control departmental property and records and was interpreted to permit denying access except for good cause. But the Administrative Procedure Act of 1946 required disclosure of rules, decisions, and organization, and the housekeeping statute was amended in 1958 ot eliminate withholding authority.

The Freedom of Information Act (1966) required disclosure of records on request, and the current amendments compel response within 10 days, limit the charged costs and provide court remedies.

Obligations under the Act are threefold: to publish in the Federal Register central and field organizations, course and method of business, and procedural and substantive rules; to make available for public inspection and copying final opinions, statements of policy and interpretation, staff manuals and instruction affecting the public, and a current index; and to furnish "reasonably described" records on request, subject to fees.

Exemptions are few and sometimes awkward or illogical: — (1) classified for defense or foreign policy reasons; (2) internal personnel rules and practices; (3) statutory exceptions; (4) trade secrets and commercial or financial information, privileged and confidential; (5) non-factual intra- or inter-agency papers; (6) personnel and medical files; (7) investigatory files when disclosure would prevent fair trial; (8) reports for regulation of financial institutions; and (9) geological and geophysical information.

Reasonable segregable portions of records containing exempt material must be made available. And even exempt material must be disclosed unless "a significant and legitimate government purpose" will be served by withholding.

Requests must be answered within 10 days, and appeals must be decided within 20 days (a combined 10-day extension for both in "unusual circumstances"), or requester may go to court. Court suits are expedited; the Government must answer with 30 days. Attorneys fees and costs are assessed against the Government where plaintiff "substantially prevails" and the Civil Service Commission must take disciplinary action against persons "arbitrarily or capriciously" withholding. Reports must be made to Congress of denials. No reliance may be laid on rules or precedents not published or made available.

Thus, records must be made available without any reason given or for no reason, or for known adverse reason to embarrass or frustrate Government action. Response must be prompt, and penalties are severe. The law has been described as "savage," a retaliation against past withholding and frustration of those seeking records from the Government.

Books and Essays as viewed by

T. C. MURPHY
Director, Engineering Management Division CECOS

The Blue-collar Worker goes on Salary, by Robert D. Hulme and Richard V. Bevan, in the March-April 1975 issue of the Harvard Business Review, P 104-112.

"You can't be treated like a boy at work and then, the minute you come home, be a good husband and father. It can't be done!" (A Ford Rouge plant worker).

Of course it can't be done, because he's not a boy.

But, to judge from traditional management ideology and practice, blue-collar workers are presumed to be boys; which is a step up, I suppose, from the jackass theory of earlier times. That came into being as a corollary to the notion of elitism, upon which all managerial doctrine/philosophy was erected (Circa 1890, et sequi).

But the elitist machine is sputtering badly, and isn't worth much on the used-ideology market today.

But relics are still about.

Ask 100 industrial managers why blue-collar workers should not be paid a salary instead of an hourly wage; and why they cannot be depended upon to report for work on time, and be subject to the same rules regarding absences as those governing white-collar workers. A majority will tell you that it wouldn't work.

Well, it is working; and this article reviews the experience of a number of companies (Gillette started in 1955) whose blue-collar workers are salaried, and who are subject to the same rules covering absences, etc., which apply to the white-collar work force.

The article begins with a section entitled "treat adults as adults." Not a bad start.

Saving Energy at NOD Crane

By CDR NORM CERVENKA, CEC, USN
Public Works Officer
and
LARRY L. CULLOP
Energy Conservation Program Mgr.
Naval Ammunition Depot, Crane

• Crane, Ind.

A sprawling, 63,000-acre ammunition depot in southern Indiana conserved energy equal to 1,552,000 gallons of fuel oil in one year. By doing so, the depot saved $339,000 in utility bills.

In FY73 (the base year) the depot consumed over one trillion BTUs of energy; in FY74, we saved over 214 billion BTUs, or 20.2 per cent compared to the base year.

Utility costs increased $426,000 in FY74 due to drastic increases in shore energy costs. Had it not been for energy conservation, costs would have increased almost 60 per cent or $765,000 — a substantial figure! This reduction continues with the first half of FY75 showing a further reduction of 11.6 per cent over FY74.

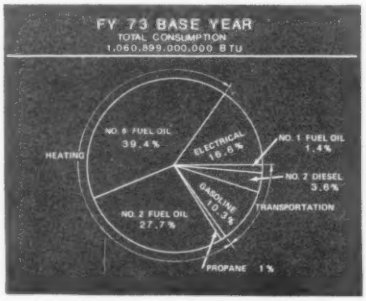
How did we do it? How are we reducing consumption and costs now? And why do officials at NAD Crane have high hopes for continuing an aggressive energy conservation program? The answer requires a look at conditions just before the energy shortage.

Crane entered the conservation arena in somewhat better condition than many Naval activities, but each advantage seemed outweighed by a corresponding disadvantage. The depot had an ongoing building-maintenance program, but the well maintained buildings were not constructed to be thermally efficient.

Storage for bulk oil was available, but needed repair since it had been used little in the days of easy fuel oil. Moreover the boilers on depot are over 30 years old, and the vast area here (larger than Washington, D.C.) is served by an aging transportation fleet.

In the fall of 1973 when the energy crisis loomed, command initiated a program to meet fuel shortages head-on. Priorities were set and a task force developed quickly. Out of this initial thrust evolved the present structure for energy conservation.

That structure depends on both command and employe involvement. Building monitors, appointed by department directors, are people who actually work in the buildings. Providing the working-level input, they assure thermostats are properly set and report any energy deficiencies.



The Energy Conservation Working Group, chaired by the Public Works Officer, also consists of representatives from each department. The group acts as an idea-suggestion center, and provides consultation service to the Executive Officer.

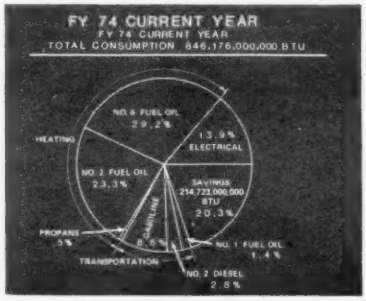
The new position of Energy Conservation Program Manager is located in the Engineering Division of Public Works. With a professional engineer as chief, the position is a focal point of expertise on energy conservation projects.

The manager coordinates projects that require technical-mechanical efforts with other PW engineers, or with the Engineering Field Division (EFD), Northern Division Navy Facilities Engineering Command.

As a collateral duty the Executive Officer serves as the depot-wide energy conservation coordinator. His office gives command clout to all energy conservation actions. The Public Works Department at Crane is large, but some others are larger so cross-departmental authority is important.

Command Officer, Capt. R. L. McArthy, leads the total energy conservation effort and organization. Command awareness of increased ulitity costs and procurement difficulties assured recognition of the grimness of the energy problem on depot and, simultaneously, developed and implemented decisive strategy to combat it.

That strategy has followed two paths. First, the PW Utilities Division monitors steam distribution from boilers to ensure valves are closed to areas where steam may not be needed



or would be wasted.

This effort to conserve fuel at the developed energy point is an important part of Crane's energy conservation program, costs nothing, and has contributed a very significant percentage to realized savings.

The second path led to technical-mechanical actions. PW engineers analyzed and improved the power factor — although at some cost (borne locally by the depot). By installing new capacitors and rearranging old ones, the Depot power factor was improved from 88.5 to 99.3, returning an annual fuel savings of $14,400, which will soon offset the cost of improvements.

As noted earlier, many buildings

used as shops or offices on depot were not constructed for heating efficiency. Many such structures were intended as ammunition warehouses but were converted as Crane became increasingly active in scientific and electronic areas.

While the buildings were insulated when converted, additional insulation, caulking, and storm windows were required to conserve energy.

Additional energy conservation actions were implemented through cooperation between the EFD, and NAD Crane. A boiler tune-up program has been completed at Crane. Crane has 110 boilers, five of which are over 600 hp, and 31 over 100 hp.

Another major thrust by Crane and the EFD was an on-site survey of facilities previously identified for possible energy savings. The survey team also brought attention to several new, specific conservation items and recommended energy-saving actions in a survey team report, many of which are now implemented.

Implementation of all these recommendations will save 269,209 million BTU's and $948,275 annually, for a total investment of $2,214,263.

About NAD Crane's ongoing energy conservation program, the survey team reported, "Northern Division would recommend the NAD Crane program to any activity as a model in establishing a new program or increasing the effectiveness of an existing program."

Opportunities for energy conservation still exist in the industrial-utility centers. Five major boiler plants on depot consume 2.5 million gallons of oil each year. Designed and constructed during World War II, the boilers are outfitted with 30-year-old, inefficient, unreliable controls that make more efficient tuning for additional reduced fuel consumption impossible.

Energy conservation efforts are also made difficult because facilities for ordnance and explosives must be remotely located. Separation requirements necessitate extensive material movement which, in turn, means many open doors.

Reducing heat loss from open doors provides an opportunity for large, tangible energy savings in Crane's future.

Solutions to these and other problems are not impossible, but they are expensive. For this reason, military construction projects (MCON) were entered by Crane for inclusion in the energy conservation investment program. For FY76 and FY77, seven projects were submitted:

— FY76, P-144, Convert explosive melting systems-Steam/HW.

— FY76, P-145, Install controls on six heating plants.

— FY76, P-146, Air curtains for production facilities.

— FY76, P-147, Install insulation and storm windows (36 bldgs.).

— FY77, P-156, Water conservation improvements.

— FY77, P-157, Electrical improvements for conservation.

— FY77, P-158, Building improvements for energy conservation.

At this writing, two of Crane's projects (P-145 and P-146) have been approved in the FY76 budget. Other projects are making their way through appropriation and authorization routes. The value and diversity of proposed improvements would promote additional energy and dollar savings to combat rising overhead in operating and maintenance areas.

One of the more interesting prospects being explored is the use of purchased electrical energy to produce steam in electrical boilers, which would replace existing oil-fired boilers.

Depot engineers consider electrical boilers a logical alternative to coal-fired boilers at NAD Crane, where 98 per cent of all purchased electrical power used is already being generated by coal at a power plant remote from the depot.

Although there is a loss of efficiency in the conversion of coal to electrical power, that disadvantage would be outweighed by improved environmental aspects of electrical boilers.

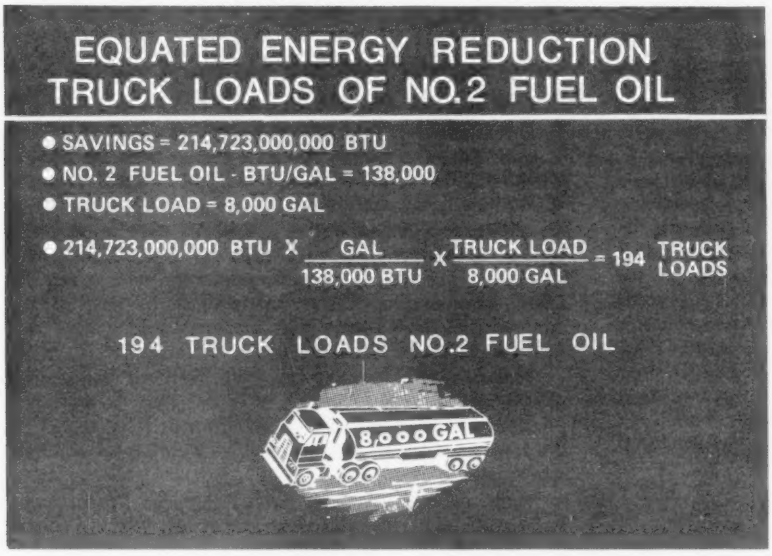
Labor-saving and non-polluting aspects of electrical boilers combined with elimination of expensive pollution-abatement units on coal-fired boilers are significant advantages. Any new method for developing energy will probably involve a conversion to electrical power at the source and will be delivered to Crane as electrical energy rather than oil.

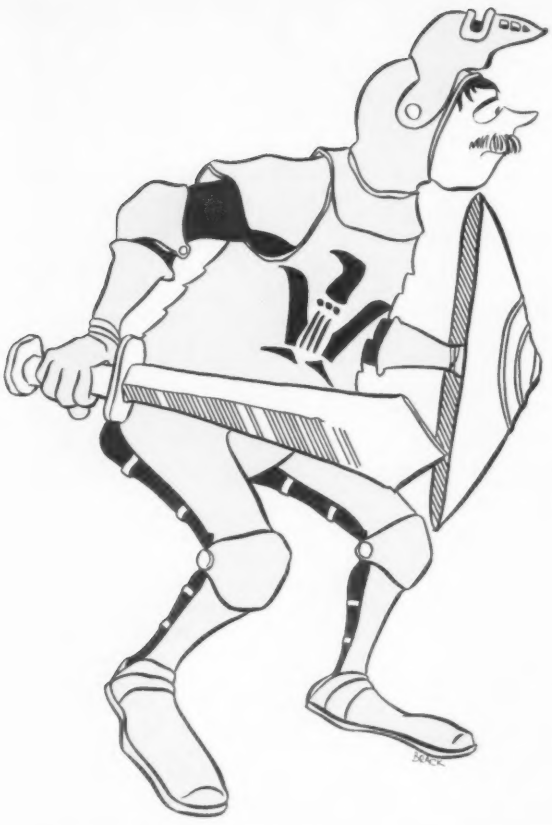
We will continue to analyze this prospect, particularly when rising fossil fuel costs begin to overtake the efficiency losses inherent in generating electricity. Old oil boilers would be converted as they are scheduled for replacement and, in this manner, eliminate large one-time expenditures.

The elimination of all fuel oil at Crane would conserve almost one-half million barrels annually and assist in the broad national goal of reduced oil usage. This could become more and more important should international balance of payments or diplomatic gymnastics further disrupt the value of fossil fuels.

Raising the "energy consciousness-ness" of employes is also a continuing project. The development of energy-saving attitudes in all workers is an important asset. While the actions that brought energy conservation to the forefront were originated by command, all employes soon became involved. Carpooling, for example, has increased to the point where three out of four employes now ride to work in a carpool.

Thus the energy conservation program at NAD Crane is the culmination of various actions. They are all directed at saving energy, and all depend on common sense, along with sound engineering design and economics.


EQUATED ENERGY REDUCTION
TRUCK LOADS OF NO.2 FUEL OIL
• SAVINGS = 214,723,000,000 BTU
• NO. 2 FUEL OIL - BTU/GAL = 138,000
• TRUCK LOAD = 8,000 GAL
• 214,723,000,000 BTU X GAL / 138,000 BTU X TRUCK LOAD / 8,000 GAL = 194 TRUCK LOADS
194 TRUCK LOADS NO.2 FUEL OIL
8,000 GAL



WARRANTY: A CONTRACT'S CUTTING EDGE

Engineering Field Divisions and others have called NAVFAC for guidance on use of the Warranty of Construction Clause in their contracts. This artice is written to answer most of the general questions presented. Specific questions require different treatment from the general areas presented here. Comments and questions are, therefore, encouraged.

Resident Officers in Charge of Construction are encouraged to use this material in their in-house training programs.

The four areas covered by this article are: The use of the warranty as a sword and shield; the inspection and acceptance clause relationship with the warranty clause; following up on warranties — your responsibility; and the defaults and warranty clauses.

By PAUL BUONACCORSI, JD
NAVFAC Contracts
• Alexandria, Va.

The Warranty of Construction Clause reads in part: "The Contractor warrants that work performed under this contracts conforms to the contract requirements and is free of any defects of equipment, material or design furnished, or workmanship performed by the Contractor or any of his subcontractors or suppliers at any tier . . ."

A dictionary defines "warranty" as: "A collateral undertaking that a fact regarding the subject of a contract is, or will be, as it is expressly or impliedly declared or promised to be and although breach of such an undertaking does not void the contract, it does make the warrantor liable for damages."

If we want to go a little further, the massive tome entitled "Corpus Juris Secundum" defines a warranty in the law of contracts: "As an agreement which refers to the subject matter of the contract but which is collateral to its main purpose, not being an essential part of it either from the nature of the case or the agreement of the parties," or, more specifically, "An assurance by one party to a contract of the existence of a fact upon which the other party may rely."

The reader can see the warranty clause, in ASPR, provides both a sword and a shield for contract administrators.

This clause is a sword as it burdens the contractor to deliver or perform precisely what he represents he will deliver or perform. Thus, the contractor who agrees to install or construct a specific "widget" as part of his contract, is required to provide a conforming "widget" before the government has to accept.

However, if after acceptance and contract completion, the "widget" does not conform or is defective, the warranty provides a shield whereby the government is protected as the contractor warranted the "widget" would meet contract specifications.

Section 1-324.1 of the Armed Services Procurement Regulation recognizes this right and states: "Such a clause (warranty) allows the Government additional time after acceptance in which to assert a right to correction of the deficiencies or defects, reperformance, and equitable adjustment in the contract price, or other remedies."

Section 7-604.4 (16 Apr 1973) of ASPR gives an example of a clause that may be inserted in fixed-price construction and architect-engineer contracts.

Warranties and the inspection and acceptance clause

Paragraph (g) of ASPR 7-604.4 states "the warranty specified herein shall not limit the government's rights under the Inspection and Acceptance Clause of this contract with respect to latent defects, gross mistake or fraud."

I am sure many of you have seen this statement in the Warranty of Construction Clause in your contracts. How many of you, however, are aware of the subtle distinctions between the Warranty Clause and the Inspection and Acceptance Clause?

These two clauses, although separate, should be used together. To that end, a pattern of problem analysis is offered which, if followed, will provide a logical route through the labyrinth surrounding use of these two clauses.

At the outset, we must point to the time sequences

which are involved in our analysis: the period before and after acceptance and completion. Before acceptance, these two clauses impress upon the contractor the need to comply fully with specifications.

Should the contractor fail to provide or perform what is required, he alone is out on a limb as no obligation compels the government to accept his work or material. Generally, this has not proven much of a problem and is well understood by all.

The real problem area is the latter time sequence, after acceptance and completion of the contract. The legal principle of finality of acceptance under the inspection clause would usually prevent the government from recovering for failures which occur, or are discovered, after acceptance.

However, the Warranty of Construction Clause in a contract extends the finality of acceptance principle to one year for discovery of the defect; and a reasonable time thereafter to give the contractor written notice of any defects.

Realizing this, how can we use these two clauses to assure we have satisfactory work? The lynchpin of this analysis is determination of exactly what problem you face. You must properly categorize the problem before acting on it.

Central to this analysis is whether all the facts were known to the government before acceptance. If you find this to be the case, stop your analysis as the legal theories of waiver and estoppel will probably come to the contractor's aid. The contractor is usually off scot-free as he can rightfully assert the work completed, although non-conforming, was accepted "as is."

Note, however, that whether or not a contractor is relieved of responsibility is a legal decision, and therefore you should consult your EFD before making a final determination.

A caution is, therefore, in order. You as OICC or ROICC, must assure the work completed exactly conforms to specifications. Do not permit government inspectors or other agents to commit you to a course of action you may feel is undesirable. If you have doubts, act then to resolve them promptly, before acceptance.

Should you find there was no knowledge of the defect before acceptance, you can proceed.

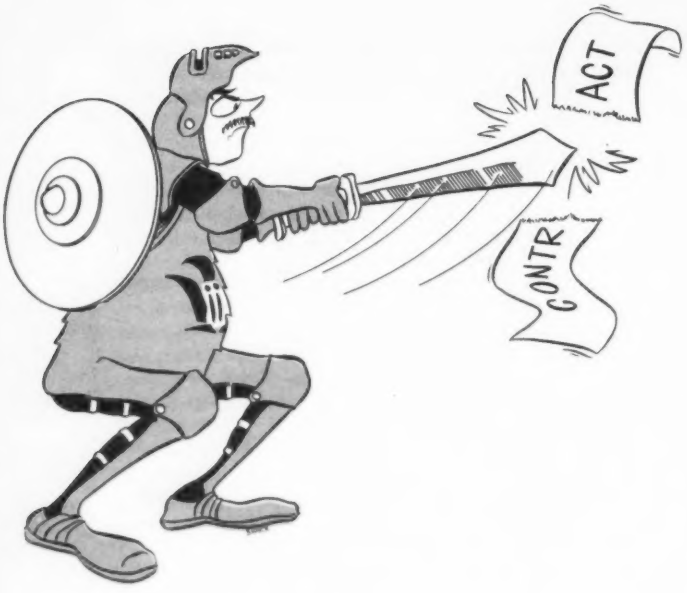
Two possible courses of action are open to you, depending on how you have characterized the problem. Your first alternative centers on problems of non-conforming work, patent observable defects of material or design furnished, or workmanship performed.

In this category, time is vital. You have, by inclusion of the Warranty Clause, extended the tolling of the finality of acceptance. One year for discovery and a reasonable time thereafter is allowed.

Unfortunately, no definition of "reasonable time" can be given. Usually, it is a subjective decision you must make, which later will be evaluated by objective standards. It will always be a judgment question depending on circumstances. Thus, if you are confronted with such a situation, act then. Do not let the problem fester.

The next alternative course of action is available if, and only if, the problem can be categorized as a latent defect, gross mistake, or fraud.

Time is still important in this category. Proof, however, is central to your analysis here. Guidance is provided here



WARRANTIES

to unravel the sometimes subtle distinctions inherent in the second caetgory.

What is the difference between a patent and a latent defect? *A patent observable defect* is something which should have been discovered through any customary or reasonable performance tests; it is obvious or evident. *A latent defect*, on the other hand, is an unknown defect not discoverable by such inspection or test.

It is something dormant but will, under the proper circumstances — such as time, heat, cold, or use — become visible or apparent. Good judgment and common sense should serve you well in these situations.

The second part of the category involves gross mistakes as may amount to fraud. The Court of Claims recently, in *Kaminer Construction Corporation* vs *United States,* decided Dec. 19, 1973, stated "the accumulative effect of the mistakes attributed to the appellant (contractor) . . . is such as to legally amount to such gross mistakes as may amount to fraud."

The Court of Claims here accepted the definition used by the Corps of Engineers BCA 2833, 68-2 (BCA Para. 7321, 1968). This definition should be restricted to the extreme facts of this case, but may provide guidance; it is not intended to preclude other working definitions based on other factual situations.

One possible working definition, which could prove useful, is: "such acts or act (willful or otherwise), by the contractor, his subcontractor, or supplier which, either by themselves or in concert, operate to induce the government to change its position and the government is thereby prejudiced." This situation will be encountered only rarely.

The last part of this category involves fraud. Fraud is an *intentional* misrepresentation by words or conduct, concealment or nondisclosure for the purpose of inducing another.

Thus, if a contractor, by act, statement or silence, represents that a pump has a certain pumping capacity and, in fact, it does not, and he is aware of this, he is accountable to the government for correction. Fraud is hard to prove, so be certain of your facts before presenting them.

Following up on warranties — your responsibility

One of the questions frequently asked of NAVFAC Contracts Division is, "What do you do with a Warranty Clause after the contract has been completed and is closed?" The problem usually arises when the ROICC has found, or been presented with, a defect or fault from a customer who wants it corrected immediately.

The ROICC goes to his contract, finds the Warranty Clause and notes he has one year from final acceptance of the work to discover defects and hold the contractor for remedying the failure or defect. Paragraph B of the clause states the "Government shall notify the Contractor in writing within a reasonable time after the discovery of any failure, defect or damage."

The ROICC fires off a note (return receipt requested) to the contractor informing him of the defect and asks correction immediately.

Should all go smoothly, the problem will be corrected and everyone satisfied. The basis of this approach is the assumption both contracting parties are acting in good faith and will fulfill their obligations under the contract. However, experience has shown this sometimes is not true.

You, as contract administrator and day-to-day contact with the contractors, will be in the best position to evaluate their performance. You must insure the specified product is delivered. If the facts presented to you reveal even the possibility of a defect, act promptly, do not wait for the defect to be manifest.

You are not required to give notice to NAVFAC or to receive authorization from NAVFAC to act on your rights under the Warranty Clause.

You can also cut the time between notice and action by sending a copy to the subcontractor who actually did the work and ultimately will be held accountable.

The time to act is when you suspect a defect. Don't rely on your one-year extension from the date of final acceptance!

Tangent to this is another guideline not to withhold money from payments due the contractor because you feel defects *may* exist and you want to be able to enforce the Warranty against him after contract completion.

If the defect is apparent before contract completion and you are aware of it, act then to have it corrected. Should the contractor disagree, he has administrative remedies available through the Disputes Clause.

When the contract has been closed and a defect becomes apparent, you have the one-year extension and a reasonable time thereafter to use the Warranty Clause. Disputes here will still be settled through normal administrative procedures.

Your unique position of contact with the contractor also allows you to negotiate problems in this area. If correction of the defect proves impractical, because of the stage of construction, you can explore either a deductive change order or, failing that, extension of the warranty beyond one year.

The latter is useful when the contractor agrees something is not absolutely correct but feels it will be satisfactory. Basically, you are asking him to back up his faith in his workmanship.

This alternative should be used only when you are unsure about the defect in material or workmanship, and extension of the warranty should not be for an unreasonable time. You must determine how long a test period is

WARRANTIES

needed, taking into consideration all the facts available.

One last point: a Warranty Clause does not relieve you of responsibility for properly maintaining and using the facility or equipment. Too often the customer has either abused equipment or failed properly to maintain it. Such neglect or inaction, if proven by the contractor, relieves him of responsibility under the Warranty Clause. If a contractor is required to submit maintenance brochures or train base personnel, make sure you get the brochures and training.

In summary, the Warranty Clause is included in a contract as a tool. Use it wisely and promptly.

Warranties and the termination for defaults clauses

"If the Contractor refuses or fails to prosecute the work, or any separate part thereof, with such diligence as will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within such time, the Government may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which here has been a delay."

The Termination for Default-Damages for Delay-Time Extensions Clause interfaces with the Warranty of Construction Clause in two areas. The first of these concerns work completed, but not yet accepted by the government. The second deals with situations where part of the work has been completed.

In the first situation, we usually face the following facts: the contractor has completed all major and minor contract requirements and is tendering the work for government acceptance. The government inspects the work but finds discrepancies in equipment or perhaps workmanship.

The government gives the contractor a "punch list" of discrepancies needing correction.

Normally, the contractor will make corrections and the government will accept and close the contract.

Simple, you say. "What is the problem, and is this not covered by the standard Inspection and Acceptance Clause?"

Generally, you are right. However, a few key points should be brought out. The decision to include a Warranty Clause is discretionary, but NAVFAC favors inclusion in all construction contracts. You normally would not include a warranty clause when inspection and acceptance tests insure conformance to specifications.

Should you determine such tests will not be adequate, you would include the Warranty Clause, shifting part of the burden to the contractor to assure conformance. Such inclusion does not waive your rights under the Inspection and Acceptance Clause, but does exempt the government from exercising diligence in its inspection.

Now, let us go back to our punch list pattern. The contractor receives this list of discrepancies and either refuses to make corrections or corrects only a few of them. What are your options?

The contractor, by signing a contract including the Warranty of Construction Clause, has expressly warranted work and workmanship will conform to the specifications. Can the contractor be terminated for default for failing to make the punch list corrections? What factors have to be considered?

The key phrases here are "substantial compliance," and "discrepancies must be material and reasonable." This means you must determine if the discrepancies relate to an integral part of the work or equipment furnished and affect operation of the facility.

Discrepancies cannot be deemed material or reasonable if they relate only to appearance of the facility or maintenance convenience.

If you determine the operational errors are so gross as to be fatal to the project and the contractor has refused to correct them, you can request termination for default.

The contractor who has been correctly terminated for default will be responsible to the government for any excess reprocurement costs. A termination for default at the "punch list" stage because of gross failure to comply with specifications will probably not be sustained on appeal; the theory being if defects were really so bad, government inspectors would have caught them.

The second interface deals with the situation where the facility or workmanship has been inspected and approved but the contract has not been closed. Can you still terminate the contract for defects the inspector did not catch or which become apparent after acceptance? The answer here is no. There really is nothing to terminate.

What remedies do you have? Several are available when the Warranty Clause is included: you can ask for correction, replacement, or for an equitable adjustment in contract price. Any such adjustment will be subject to the Disputes Clause, and, an agreement by both parties closes the matter there and then.

If it can be proven the discrepancy is so material no corrective action will permit the facility or item furnished to operate successfully, a demand for reimbursement of the purchase price can be made.

The first hand held underwater hydraulic drill bores into a granite block during acceptance tests. The hydraulic drill is superior in many ways to older, pneumatic drills.

CEL-CEC-SEABEE

A Partnership in Progress

• **Port Hueneme, Calif.**

The Civil Engineering Laboratory here traces its origins to the early 1940's. Among its charter "customers" were the Navy's Civil Engineering Corps (CEC) and the then newly-formed Naval Construction Battalions.

The laboratory's first roots were planted at the Advanced Base Proving Grounds, Davisville, R.I., where engineering projects and promising proposals from CEC and Seabees were field tested before tactical combat use during World War II.

Since then, the professional-technical association between battalions and laboratory has developed on many fronts. The laboratory, for more than 30 years, has supported Seabees with better tools, improved equipment, and advanced methods of operations.

Geographically and logistically, the laboratory and the Seabees became neighbors when the Naval Civil Engineering Laboratory moved from Solomons, Md., to Port Hueneme and combined talents with the West Coast Proving Grounds.

More than 20 Seabee-oriented projects are underway in all three laboratory departments: Civil Engineering, Mechanical & Electrical Engineering, and Ocean Engineering.

On most projects, the laboratory works closely with the Civil Engineer Support Office, Port Hueneme.

Excellent inter-service cooperation is evidenced in a project now underway at Diego Garcia in the Indian Ocean. MCB-3 has borrowed the laboratory-developed experimental automatic blade control kit for bulldozers which uses a laser system to control blade elevation.

The laboratory is acting as consultant, but the Seabees are installing the kit, doing the work, testing, and evaluating the system. The laser system will be used in elevation surveys and the kit for grading runway extensions.

The kit is being developed for the Marine Corps which approved the "loan" at the Seabees' request.

The laboratory keeps the Civil Engineering Support Office informed of what it is doing for the Marine Corps and other military services. Such close interaction often results in additional programs that will ultimately benefit the Seabees and their missions.

Following are capsule reports of various laboratory projects that will directly benefit Mobile Construction Battalions and Amphibious Construction Battalions.

Automated Forklift Load Stabilizer

A simple kit featuring a switching circuit attached to a standard rough terrain forklift stabilizes loads automatically. The device controls roll and pitch motions of the forklift tines and allows faster operations, less operator fatigue, and less chance of load spillage. An experimental system has proven successful.

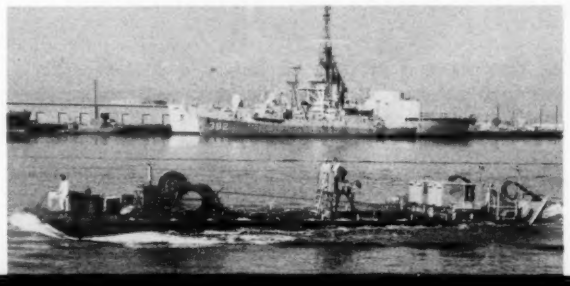
Hydraulic Outboard Propulsion

Tail pieces on propulsion systems now in use are elevated mechanically by rotating. This results in a loss of thrust and steering control in shallow water. The propeller hangs below the bottom plane of the warping tug and must be raised before it strikes sand or submerged objects. The laboratory-developed hydraulic unit also raises the propeller for shallow water but keeps it horizontal. This affords better maneuverability in water near shore. Amphibious forces using the new system will be able to maintain full power.

Hose Reel

The laboratory has developed a new portable powered hose reel that is now operational. Former amphibious as-

The prototype hydraulic marine propulsion system mounted on the stern of this warping tug develops 11,500 pounds of thrust for amphibious forces.



sault hose reels had 5,000 foot hose capacities, restricting the operational mobility of amphibious forces. The weight (22 tons) and size (14 feet by 13 feet by 12 feet high) prevented shipment by air or truck.

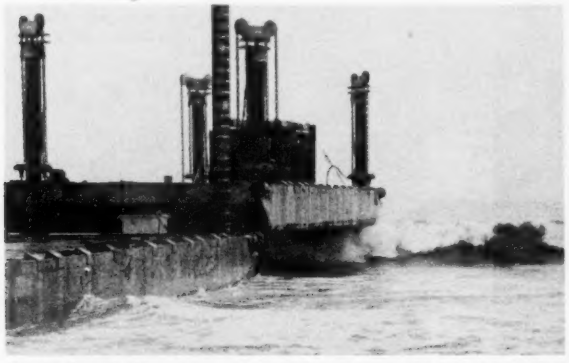
The laboratory system includes seven interchangeable drums. It can lay and retrieve 5,000 feet of hose aboard an LCM-8. The laboratory is developing a hose-drum handling device for the LCM-8, LCU and warping tugs. No single component of the new system weighs more than 5,000 pounds.

Concrete Mixer

Final drawings are being made for a low-profile concrete mixer. The laboratory developed features that will eliminate deficiencies in the 16s mixers now used by MCB's. A high center of gravity in current mixers causes instability, making them difficult to tow over rough, winding roads. Their high profile also prevents loading aboard C-130 aircraft without major disassembly.

The new mixer eliminates problems of cable hoist failure, water tank reliability, and excessive vibration.

The laboratory is continuously developing and testing new or better tools for Seabees working on land or their counterparts in the water. Laboratory engineers strive to improve the Seabees' table of allowance of tools and small equipment. The laboratory first determines a given problem concerning a tool. Commercially-available tools (presumably better) are screened and those meeting requirements will undergo laboratory evaluation and subsequent in-service testing.



An hydraulic lift system developed by the Civil Engineering Laboratory lifts a pontoon causeway above breaking surf on four piles.

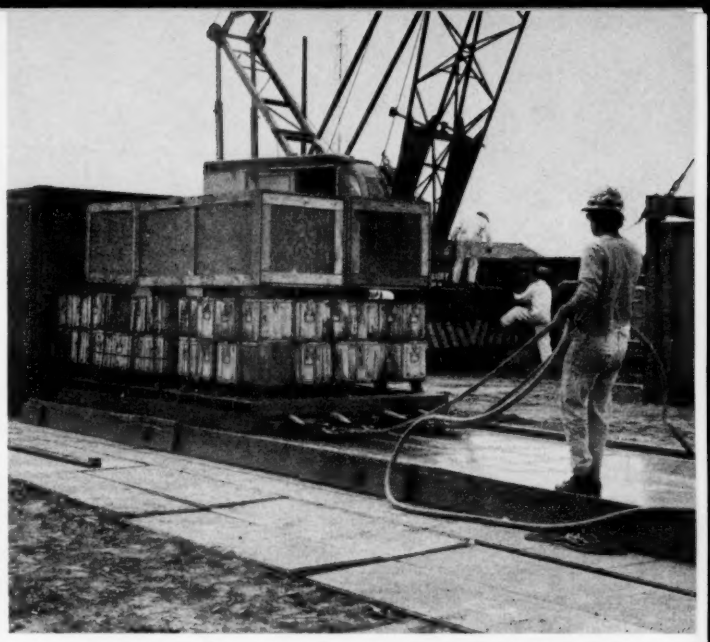
Now undergoing laboratory testing and evaluation are portable band saws, concrete vibrators, rotary hammer drills and ring saws. They may soon be added to the Seabees' tool chest.

Under a concentrated program of undersea tools for divers, the laboratory has helped design and develop improved power saws, drills, and impact wrenches. Its Diving Locker at Port Hueneme Naval Construction Battalion Center, assists evaluation of different or improved tools.

Elevated NL Pontoon Causeway

Of prime interest to all Navymen is the development of an elevated causeway system at the Civil Engineering Laboratory. It is one of several subsystems in an integrated, balanced, cargo handling system for unloading container ships and bargeships at advanced bases where normal port facilities are not available.

Development will make it possible to bridge the surf zone and extend a dry roadway to an offshore point for cargo unloading. Elevating components successfully tested in actual surf conditions have a 200-ton capacity with a lift rate of six inches per minute.



This air bearing transporter system makes possible loading and unloading of cargo pallets in a fraction of the time needed for conventional systems.

Other complementary subsystems under laboratory development include a side-loadable warping tug, a self-propelled causeway and offshore floating platforms.

Air Bearing Transporter

The transporter, or air pallet, has proven successful in removal or storage of cargo within an 8x8x20 foot container. The load literally rides on a cushion of air. Consequently very little effort is required to move it. Two men can easily push a 20-ton load on flat, smooth surfaces. They can also extract 20 tons of cargo from a container in 20 seconds.

Bargeships in Amphibious Operations

In support of amphibious logistics, the laboratory has developed system capabilities, including hardware, for new commercial barge-carrying ships — LASH, for instance — with their cargo barges. The program includes four major operating areas: (1) Barge launch and retrieval; (2) Barge marshalling; (3) Barge cargo discharge; and (4) Beach interface.

Side-Loading Warping Tug

Laboratory engineers are working with ACB-1 on the development of a warping tug capable of being side-carried on an LST. This would eliminate the need for providing LSD-LPD wet-well support necessary for tug transport. Wet well space is at a premium and is usually reserved for higher-priority equipment.

The laboratory is involved in many other projects designed to improve the capabilities of Mobile and Amphibious Construction Forces. Included are self-propelled causeways, connectors for size by size joining of causeway sections to form a large platform, a portable breakwater for naval operations, a powered tagline to arrest load pendulation under a crane hook, multi-pallet slings to pick up four pallets on one lift, and an advanced multi-purpose surfacing system.

Based on past results, present developments, and future promises, the Seabees-Civil Engineering Laboratory "partnership" is stronger than ever.

One of Its Kind

The Ben Moreell

The Ben Moreell Battalion joins other Naval Sea Cadets of Southern California at Los Angeles' Dodger Stadium during the annual Sea Cadet Night.

There's fun too, for the novice seamen as they celebrate their anniversary date at the Point Mugu Naval Missile Center. The unit now includes nearly 30 young women in its rolls.

Admiral Ben Moreell, founder of the WWII Seabees, and for whom the Port Hueneme based Naval Sea Cadet unit is named, presents a trophy to an outstanding cadet.

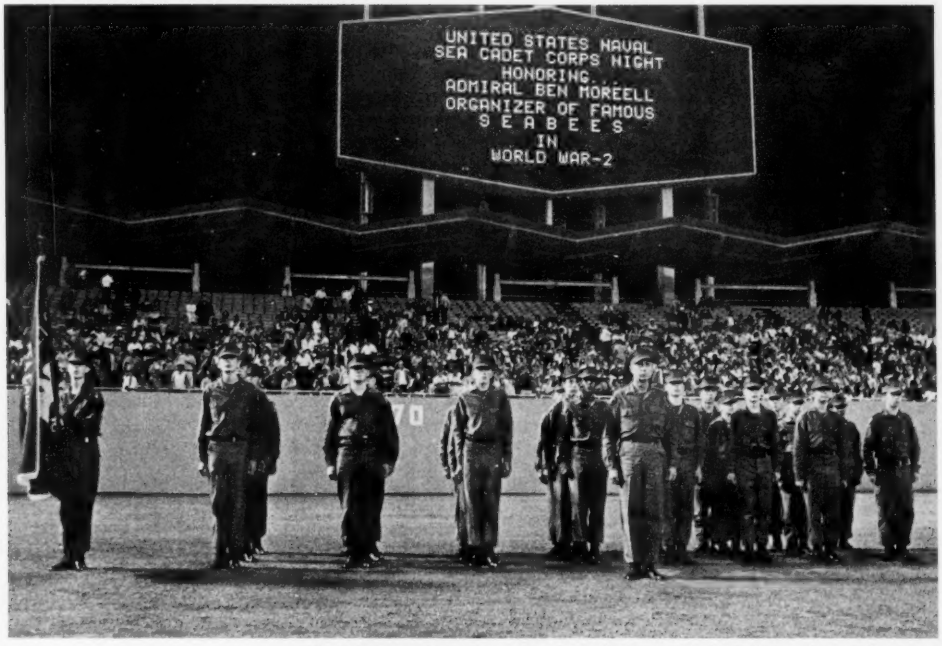
General of the Army Omar Bradley, famed WWII hero, addresses the Naval Sea Cadets and crowd at Dodger Stadium. Onlooking is Leonard H. McRoskey, western regional vice-president, U.S. Naval Sea Cadet Corps.

The Ben Moreell Sea Cadet Battalion is a unit of the nationwide U. S. Naval Sea Cadet Corps, which is jointly sponsored by the Navy League of the United States and the U. S. Navy.

The unique Seabee Battalion of cadets was initiated and sponsored by the Ventura County (Calif.) Council of the Navy League. Since its commissioning in January 1971, it has been under the guidance of the council's sea cadet committee chairman, Harold Wilcox, of Ventura, Calif.

LT James E. Daly, NSCC, assumed command of the unit in September 1971, and is credited with much of its four year growth and maturity. LT Daly, who retired in June from his longtime faculty post at the Naval School, Civil Engineer Corps Officers, will relinquish his Sea Cadet command in September.

Sea*(bee)* Cadet Battalion



The Dodger Scoreboard acknowledges Admiral Moreell and 'his' unit which is the only Naval Sea Cadet unit organized as a Seabee Battalion. The unit took last years' district-wide drill award in competition held at the sports arena.

Busy Man is LT James E. Daly, NSCC (below) commanding officer of the Ben Moreell Sea Cadet Battalion for the past four years.

A Rigid Cadet (below) stands his first inspection from CDR Billus L. Whitworth, USN-Ret., who commanded the unit until relieved by LT Daly.

Vietnamese Refugees Get A 'Grande' Welcome

When more than 69,000 South Vietnamese refugees started on their way to a new life in the United States, the U.S. Navy and its Public Works Center (PWC) at Subic Bay were prepared to furnish the first intermediate stop.

The men, women and children with hastily gathered possessions were temporarily billeted at "Tent City" on Grande Island in Subic Bay. At one time more than 13,000 refugees were housed on the island awaiting flights to Guam or Hawaii. They were flown to Subic Bay by U.S. Navy and U.S. Air Force planes from Saigon just before the communists overran the city. The great majority of them, however, arrived aboard U.S. Navy ships, which had picked them up from smaller craft in the open sea.

To cope with the problems of food, shelter and sanitation — the entire Navy base community was mobilized. At the Public Works Center the maintenance, utilities, transportation and material departments were specifically responsive. One week before the first group of refugees arrived, the PWC planning office and operations group with Naval Station officials had claimed facilities for transitional use.

The Center used pre-fabricated drums for temporary toilet facilities, established a water distribution system, and rehabilitated existing cottages on the island.

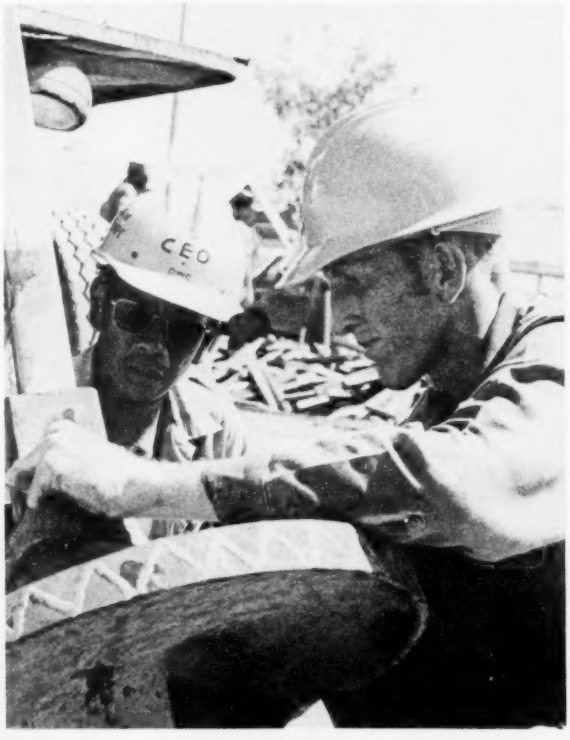
PWC personnel also assisted the Seabees, Marines, NavSta military and civilian personnel in converting available buildings to house the galleys and other support facilities, pitching hundreds of tents and setting up cots and other sleeping materials. PWC technicians also pieced together two mobile refrigerator units, each with 630 cubic feet capacity.

According to Lieutenant Commander David E. Wheeler, PWC Operations Officer, plans had been drawn up and executed days before the arrival of the refugees. "We were not caught by surprise," he said, "but more people came than we first expected. They arrived so fast and in such great number that we had to expand the capability of the island overnight."

From then on improvisation was the name of the game. More tents were hoisted, lighting facilities increased, longer water distribution systems laid and sanitation facilities increased.

The refugees were transported from Cubi Point's Radford Airfield and NavSta's Riviera Pier for a short cruise to the island. Following the short period of rest and processing they were returned to Cubi Point for flights to Guam or Hawaii and from those points on to the reception areas in the United States.

Additional lighting — Seabees install additional lighting fixtures before the refugees arrive.

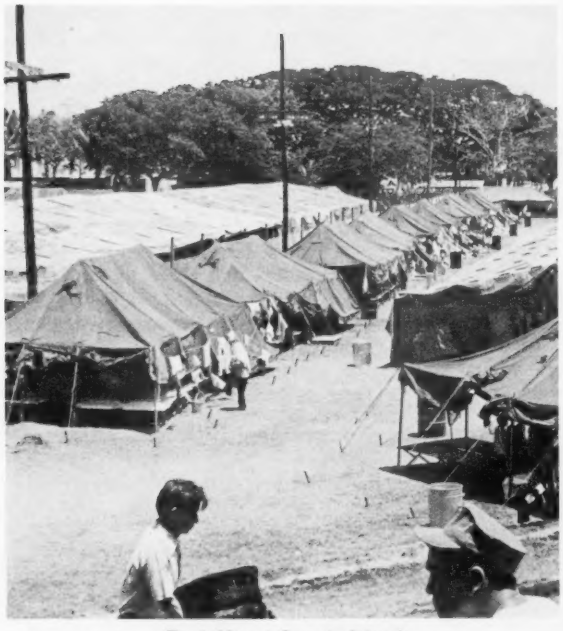


PWC employe and Seabee pitch in to prepare the island for the refugees.

Refugees board buses from the Radford Airfield, Cubi Point.

Cruise to Grande Island — Boats such as this ferried refugees.

The refugees come.



Tent City at Grande Island.

A Vietnamese woman makes use of the water distribution system constructed.

THE RED HILL TANKS

A report on the time-tested fuel storage facility in Hawaii

By H. G. Lasser

•Pearl Harbor

The Red Hill Fuel Facility, U. S. Naval Supply Center of Pearl Harbor, Hawaii, is the fueling center for the mid-Pacific area. Many engineering features make this installation unique, such as size, complexity and its protective cover.

The main portion of the facility consists of 20 petroleum storage tanks set into the mountains near Pearl Harbor. These tanks were completed in 1944 and have been in continuous use, except for periodic servicing, since that time.

Constructed of ¼" steel plates 20' long and 5' wide, the tanks are 260' high and 100' in diameter.

Each tank is capable of containing approximately 300,000 barrels or 13 million gallons of petroleum fuels.

The construction was accomplished by removal of rock to form access tunnels and voids to construct the steel tanks. After the tanks were welded in place and the appropriate lines and connections were made, concrete was poured around the tanks leaving access tunnels and catwalks at the 190 ft. level into the tanks.

The uniqueness of the Red Hill Facility cannot be overstressed. Its estimated replacement cost is approximately $188 million, with the original cost approximately $31 million. This facility was designed and used for the storage and distribution of heavy petroleum distillates (Navy special) and later was converted to light petroleum distillates.

The original conversion of four tanks took place about 15 years ago, and in 1962, these tanks were coated to prevent corrosion of the steel and leakage of the light petroleum distillates. More recently the remaining 16 tanks were placed into light petroleum product service, and thus, it is planned to use a similar lining system.

Upon a recent inspection of a coated tank, little or no corrosion was found. How could this have happened after 30 years of service? Good housekeeping is one answer, appropriate planning is another, and an unusual coatings program was the final factor. In combination, these three factors have and will continue to extend the useful life of the facility.

The four tanks which were coated used a polyurethane lining system. In the Spring of 1974, a thorough inspection was made of the critical bottom area of a tank and as much of the side wall as could be reached from the catwalk. The general condition of the lining was judged to be excellent for the 12 years of service with petroleum products. There were no cracks, breaks, flakes or areas of adhesion failure to be found in the liner which was tough and resilient.

There were some blisters caused, for the most part, by the original hydrostatic test in 1962, before the lining had time to set. These blisters remained intact unless abraded by personnel walking on the blistered area and exposing the primer coating under the blisters. When the primer was exposed, corrosion occurred at the exposure.

The coatings for the lining of the tanks were developed by the Naval Research Laboratory. These coatings are required to provide protection from corrosion and as a seal over porous welds while the tank was under an internal pressure of 100 psi.

This design requirement was so well met that there was no significant leakage of light pertoleum distillates in the lined tanks. If leakage had occurred, it would have been the result of existing porosites in the welds. Since the tank showed no detrimental corrosion, the coatings protected the steel from the effects of the fuel and water.

It is judged that these linings should be replaced in the tank bottom at 15 year intervals and at much longer intervals for the sides. The replacement of the liner in the bottom is required because of the abrasive action of persons walking on the bottom for periodic inspections. Since the exact life of the coating has not been determined, it is difficult to project how long the coating will last on the side walls.

The previously lined tanks were prepared for lining by garnet blasting the steel to be coated. Then the blasted surfaces were pretreated with a coating of a vinyl butyral resin pigmented with insoluble zinc chromate. After pretreatment, a urethane resin pigmented with insoluble zinc chromate was applied, followed by polyurethane intermediate and finish coats. This type of coating system will be used in the current relining project.

It is interesting to note that each tank has 87,000 square feet of surface to be coated at the cost of $500,000 and will use 1,100 gallons of coating materials. The use of these coatings will cause a problem: the removal of 500 gallons of solvent in the paint which must be evaporated before the coatings will dry. Since the tanks are closed systems connected to the outside atmosphere through access and maintenance tunnels, all the solvent ladened air must be removed through these tunnels to the outside.

TAMING A TEMPEST

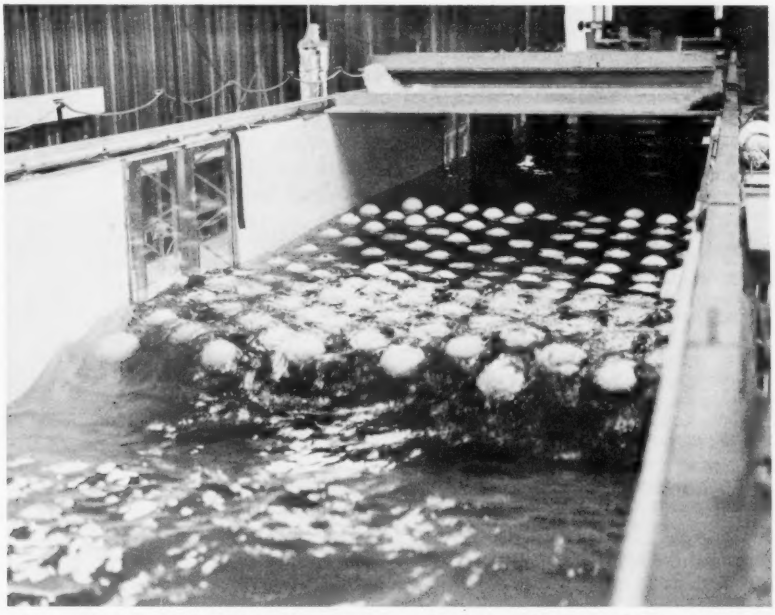
• Port Hueneme

An unusual tethered float breakwater is now under cooperative development by the State of California and the U.S. Navy.

The Civil Engineering Laboratory, representing the Navy; and the Department of Navigation and Ocean Development (DNOD) representing California, completed agreement on the development Feb. 4, 1975.

The development is a cooperative effort, with project management assigned to the lab, engineering development provided by the Naval Undersea Center, San Diego, and scientific support by DNOD.

The breakwater consists of rows of floating spheres, individually tethered to a suitable ballast or anchor. Such an array, or patch, of floats reduces the height of incoming waves by dissipating wave energy.



A model of the tethered float breakwater at the Scripps Institute of Oceanography. The breakwater is being developed jointly by the Navy and California.

Capt. Albert R. Socha, CEC, USN, officer-in-charge of the lab, and Frank Torkelson, DNOD acting director, signed the agreement.

"We welcome this opportunity to join a state government in a project which has the potential for both defense and domestic uses which the breakwater displays," Capt. Socha said.

Torkelson, of DNOD, noted that, "Although we are striving to accomplish somewhat different goals with this breakwater, a cooperative venture with the Navy will help us both develop this system at greatly reduced costs. The tethered float breakwater has the potential of revolutionizing harbor and marina protection systems throughout the world."

Various sizes of installations can be constructed, depending upon the size of waves encountered and the amount of energy which must be removed from the waves to create the calming effect desired.

The Navy's interest in the breakwater is based on the need for transportable breakwaters for military applications. DNOD interest is related to the need for breakwaters as harbors of refuge along the California coast and for protection of marinas and other boating facilities in inland waters.

Present plans call for tests of scale models in a wave tank at the Scripps Institute of Oceanography, La Jolla; followed by a field installation in an appropriate bay or harbor to obtain further engineering data. By July, 1975, designs for an inland waters scale breakwater should be completed.

The concept of tethered floats as a breakwater was originated by John D. Isaacs, professor of oceanography at Scripps. The system was developed by Dr. Richard Seymour of DNOD, first as a graduate student under Isaacs.

Initial support of the research came from the Foundation for Ocean Research and the National Sea Grant Program. Some of the instrumentation to be used in evaluating the breakwater will be supplied by Scripps, using Sea Grant funds.

The agreement includes $100,000 from the Naval Facilities Engineering Command, and $100,000 from California to finance studies for this fiscal year.

If funding is available in the future, construction of larger breakwaters and open ocean breakwaters will be undertaken.

Most conventional breakwaters are constructed of material trucked to the site and placed in the water. The resulting breakwater, although effective in preventing storm waves from wreaking havoc in harbors and bays, also interferes with natural water movements. In bays or harbors, this can prevent flushing impurities by tidal currents.

The tethered breakwater, which presents no such barrier to water movement, would stop wave damage but not tidal flushing action.

The concept offers other advantages. Most small scale breakwaters could be easily transported and handled. Components could be assembled in one place and carried to a remote site for installation. A tethered float system can also be installed in water too deep for a conventional breakwater.

Wave tank tests using 6-inch floats have already demonstrated the calming effect of this breakwater. Data from tests in the Scripps wave tank show waves of 16-foot height in the ocean would be reduced to 6 feet with 10 rows of 12-foot spheres. Larger floats or a greater number of floats would have a corresponding greater calming effect, project personnel point out.

One goal of present research is to determine the most economical size and configuration for the tethered breakwater's components for given operating conditions.

NEW FROM CECOS

A Professional Reading Program

Considering the mission of the Civil Engineering Corps Officers School (CECOS) and its contribution to the Civil Engineer Corps, (CEC) two facts have become increasingly evident:

- Beyond the traditional, billet-oriented, short courses and refresher course, CECOS has offered little to the career military professional in the matter of continuing general education.

- Self-education by means of a selective reading program is perhaps the most neglected of all learning resources.

This last has special potential virtues. It is very inexpensive; (studies in residence are costly in time and money) and the unit learning gain/hour from reading a good book which appeals to the interest and needs of the reader is much greater than that gained from an hour of lecture.

Putting these ideas together, CECOS has developed a reading program of titles selected for their special value to the career military executive. The program does not include technical fields, which are the province of the Post Graduate Program. Four subject matter fields are tentatively planned:

- Management
- International Relations and National Defense
- Contemporary Issues in American Society
- Military History and Institutions

Since the opportunity for study in these fields is seldom possible, because of the nature of the engineering degree curricula, it is intended that the CECOS program for continuing education will help toward overcoming that handicap.

While experience will dictate the final form of the program, current plans suggest a time-limited certificate without examinations or formal book reveiws. It will *not be a correspondence course*, and, because of the cost, it will be available only to CEC officers on active duty. Books will be stocked in the Moreell Library and sent to program participants by the librarian; some delays can be expected until stocks are built up. New titles will be added semi-annually. Certain titles in the program will be *required reading; others will be elected by the reader.*

• MANAGEMENT

THE PROFESSIONAL MANAGER, McGregor — McGraw-Hill, 1967 (Best available and most useful on this subject).

THE GREAT EXECUTIVE DREAM, Heller — Delacorte Press, 1972 (An exceptional treatment of the subject of management; especially instructive for those on the public payroll).

CORPORATE MANAGEMENT IN CRISIS, Ross & Kami — Prentice-Hall, 1973. (All men of wisdom gravitate toward the private sector, where they are able to contribute to corporate success. Right? Take a look in the boardroom closet).

• INTERNATIONAL RELATIONS

20TH CENTURY AMERICAN FOREIGN POLICY, Caridi — Prentice-Hall, 1974. (Tracing American foreign policy, and its results, from the war with Spain to Vietnam).

POLITICAL DYNAMICS OF THE MIDDLE East, Hammond & Alexander — A. M. Elsevier, 1972. (A regional study of the politics and economics of nations, Morocco to Iran, including the problem of Palestine refugees).

THE FALL OF KHRUSCHEV, Hyland and Shryock — Funk & Wagnalls, 1968. (Includes an excellent account of the Kennedy-Khruschev face-down during the Cuban Missile Crisis).

• MILITARY HISTORY AND INSTITUTIONS

THE TARNISHED SHIELD, Walton — Dodd Mead, 1973. (Probably the best analysis written about the effect of the emotional trauma on the home front, and the political 'management' of the Vietnamese War, on the U. S. Military by an informed author).

THE NAVAL WAR AGAINST HITLER, MacIntyre — Charles Scribner's Sons, 1971. (In a sense, World War II stood still for almost two years until the sealanes to Europe were secured by destroying the U-boat fleet. This was difficult; this book tells how).

• CONTEMPORARY ISSUES IN AMERICAN SOCIETY

THE JOB REVOLUTION, Gooding — Walker & Co., 1972. (An excellent account of what's happening, (and its causes) to the American work ethic).

ACADEMIC FREEDOM AND ACADEMIC ANARCHY, Hook — Cowles Book Co., 1970. (Probably the most articulate statement on the subject available, by a man whose credentials and performance are uniquely qualifying).

THE REAL MAJORITY, Scammon & Wattenberg — Coward-McCann, 1970. (An introduction to American politics of the 1970's).

Details of the certificate requirements and an annotated bibliography within each of the four fields of study are available upon request in writing from the Academic Director or Director, Management Division, Naval School, Civil Engineer Corps Officers, Port Hueneme, California 93043 — Autovon 360-5655.

1975 READERS SURVEY

NAVY CIVIL ENGINEER

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SUBMIT PRIOR TO 15 AUGUST 1975

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I usually read: ☐ all; ☐ more than half; ☐ less than half; ☐ hardly any of the contents of The Navy Civil Engineer.

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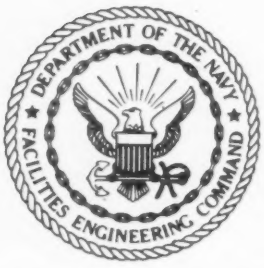

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Engineers for the Navy

Rickover Hall, USNA

Artist's concept of the Naval Academy's newest building, Rickover Hall. The French Renaissance-motif building will house advanced engineering studies facilities.

By LCDR DENNIS F. McCAHILL, CEC, USN
AROICC, U.S. Naval Academy

• Annapolis, Md.

Early in the spring of 1974, a brief ceremony took place at the United States Naval Academy which was at once traditional and tradition-breaking. The ceremony was to honor Admiral Hyman G. Rickover on the construction site of the Naval Academy's new Engineering Studies Complex, which will bear his name.

Principal speakers were Secretary of the Navy, John W. Warner and the Superintendent of the Naval Academy, Adm. William P. Mack.

The traditional part of the ceremony involved Admiral Rickover welding his initials on one of the main steel support columns of the building named in his honor. This inscription ceremony commemorates the Navy practice of authenticating keels.

Dating back to World War II, various dignitaries, including U. S. presidents, have etched their initials on the keels of major Navy ships before launching and commissioning.

Tradition was broken by the Naval Academy in naming the building for an individual during his lifetime. This exception was earned by Admiral Rickover through his tremendous contributions to Naval engineering in his role as father of the nuclear Navy.

Built at a cost of $30 million, with an additional $15 million for collateral equipment and specialized laboratory spaces, Rickover Hall is scheduled for occupancy of classrooms and administrative spaces in the spring of 1975, and for full use, with the exception of a few specialized laboratory facilities, at the beginning of the fall semester in September, 1975.

Designed as a joint venture by John Carl Warnecke and the George M. Ewing Company, the new structure will reflect the same modified French Renaissance style as nearby Nimitz Library and Michelson-Chauvenet Halls. The reinforced concrete and structural steel building, with an exterior of precast architectural concrete and natural granite will shelter nearly 300,000 square feet of classroom, administrative, and laboratory space.

The latest features for teaching six of the seven accredited engineering majors offered by the Naval Academy will be incorporated. The Aerospace, Marine, Mechanical, Ocean, and Systems Engineering majors will be provided for, as well as Naval Architecture. Facilities for Electrical Engineering will remain in Michelson-Chauvenet Halls.

The ground floor, which has about one half of the building floor space, will provide full laboratory facilities and technical support for all engineering disciplines other than electrical engineering. Also on the ground floor are the oceanography science laboratories.

The first floor will include the main entrance lobby, technical model demonstration room, large lecture halls, design and drafting rooms, computer data control center, and computer aided design classrooms. The second floor will provide classrooms, seminar rooms, and some office space; and the third floor will include faculty office and administrative spaces, as well as conference and seminar rooms. (*Turn page please*)

Rickover Hall, USNA

Although the laboratories will provide normal support for the engineering curricula taught at the Naval Academy, some special features are worthy of note. Among these are:

The Marine Propulsion Laboratory with an operational model of a ship's propulsion plant. Steam will be provided by a "D" type boiler, with a water brake dynomometer to take the shaft power output. The condenser uses cooling water from Dorsey Creek. The model is capable of remote or "hands on" operation.

The Aero Propulsion Laboratory allowing testing of fully operational jet, rocket, and reciprocating aircraft engines. Experiments will take place in an explosion proof space, with full remote control capability.

A Rotor Laboratory with the capability for demonstration and research on rotor blades up to 20' in diameter. A retractable roof will permit air flow through the blades, while the side walls of the building can be raised to permit exhaust space for the air.

A 380' High Performance Towing Tank providing demonstration and research capability for Naval Architecture, Ocean Engineering, Oceanography, and other disciplines. A wavemaker and dry dock are associated. High speed and low speed carriages capable of actual test speeds of up to 30 knots are provided.

An Ocean Engineering Laboratory which contains a large L-shaped tank equipped with a wavemaker for nearshore ocean engineering studies, as well as a small pressure vessel capable of subjecting models to pressures of up to 15,000 psi.

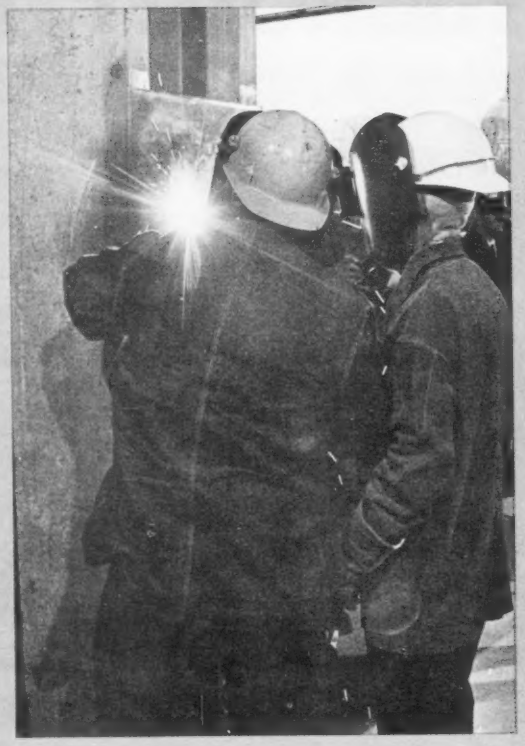
A Nucleonics Laboratory with the capability for nucleonics demonstration and research. A neutron generator is installed for basic physics studies and activation analysis. A Californium neutron source is available for prompt and decay gamma ray studies and mineral exploration.

Computer Aided Design Rooms for use in design courses which use on-line computer capability with classroom terminals in solving design problems and investigating new possibilities in various areas of engineering design.

The Hybrid Technology Laboratory featuring computer set-up for demonstration and research using the analog/digital capabilities of the hybrid computer.

Technical Support Spaces for support of all laboratory work, including foundry, machine shop, woodwork and model shop, electronic and mechanical calibration facilities, etc.

The Technical Model Demonstration Room with cutaway and scale models of ships, aircraft, and various elements of each, for teaching and demonstration purposes. A full-scale, cutaway model of a ship's boiler, turbine, and condenser system is included.



Adm. Rickover watches as a workman inscribes the admiral's initials on the new building. Adm. Rickover is the "father" of the nuclear Navy.

Rickover Hall will provide the Naval Academy with one of the finest undergraduate engineering educational facilities in the world. It will play a significant role in attracting outstanding students to the Naval Academy and to careers in a Navy which has a greater need than ever before in its history for officers possessing the highest level of technical training.

Summarizing the role of the new building, Secretary Warner said, "Just as it's namesake has been a catalyst and leader of the technological progress in the Navy for many years, Rickover Hall will be a focal point of learning for midshipmen as they prepare themselves for their role in the U. S. Navy and the nation it serves."

Naval Facilities Engineering Command
SITUATION REPORT

PERSONNEL SUPPORT FACILITIES FOR THE NAVY - The Navy's recent era giving new direction and emphasis to "personnel support" is now bearing fruit in facilities being made available for Navy/Marine Corps personnel. During the 1972-1975 period some $350 million was budgeted for the construction of bachelor housing and other personnel support facilities. When completed this effort will provide new and modernized bachelor enlisted quarters (BEQs) for some 59,000 enlisted personnel at 135 activities throughout the world and new dining facilities at 30 activities serving over 30,000 persons. Other supporting facilities to be provided include theaters, gymnasiums, and clubs. Continuing military construction programs include an additional $116 million for personnel support facilities in Fiscal Year 1976 and 1977.

PRODUCTION MANAGEMENT SYSTEM FOR PUBLIC WORKS CENTERS - The pilot installation of PMS Phase II is nearing completion at PWC San Diego. PMS has been developed by NAVFAC and includes a new standard organization for Public Works Centers, a standardized work flow, new job planning procedures and a PMS Data System which will be a standard sub-system of PWCMS. PWCs are now preparing for the Phase I installation which is expected to start in September 1975. The new system will provide the capability to increase planning, scheduling, and appraising work through all steps of the job flow. This will improve response time and reduce cost and provide an industrial oriented operational environment in which PWCs can function.

OIL SPILL TRAINING FILM COMPLETED - A 17 minute color training film entitled "Cleanup - Some Basic Tools for Oil Spill Removal in Navy Harbors" (MN-11474) has been completed by NAVFACHQ and is being distributed by the Naval Photographic Center to field activities with oil spill cleanup responsibilities. The film is intended for use as an introductory training film for personnel assigned to oil spill cleanup crews. The various types of equipment used to contain and clean up spills are introduced - fire hoses, piston film, sorbents, booms, and skimmers. The principles of operation and methods of use along with the advantages and disadvantages of each representative type of equipment are demonstrated.

Naval Facilities Engineering Command

SITUATION REPORT

AXCESS ENERGY COMPUTER PROGRAM AVAILABLE - Computer analysis is the only way to go when determining the most energy conservative design of new buildings. The power and speed of the computer permits comparison of multiple architectural, mechanical and electrical system variations, a task heretofore too laborious to be done by manual calculation methods. Annual energy consumption can usually be reduced a minumum of 20% using the computer design technique. A computer program for energy analysis, known commercially as AXCESS, is now available for EFD use through FACSO at Port Hueneme. Recently, a one week training course was conducted at NAVFAC on the theory and use of AXCESS. The course was attended by EFD designers and utilities engineers.

AIRFIELD CRITERIA - Airfield geometric and pavement design criteria have been undergoing extensive modification as part of a three-fold effort to standardize and consolidate existing Navy, Army, and Air Force criteria. Efforts are underway in preparing tri-service manuals on airfield layout and geometric design, flexible airfield pavement design, and rigid airfield pavement design. NAVFAC is acting as project manager for the flexible pavement design manual and the work is being accomplished by the Civil Engineering Laboratory. Target date for completion of the manuals is December 1975.

COMPUTER ENERGY ANALYSIS FOR NEW AND REHABILITATED BUILDINGS - NAVFACINST 4100.7 of 7 March 1975 requires a computer energy analysis be performed for most new and major rehabilitated buildings in order to determine the most efficient method of energy utilization. Implementation of this effort will produce energy efficient designs for the years ahead. The instruction details the projects requiring analysis, both by size and type of system, and describes the minimum technical requirements of computer programs which may be used.

COMPLETION OF OCEAN SIMULATION FACILITY, PANAMA CITY, FL - The world's largest and most complex facility for studying diving physiology and diver equipment has been completed. The OSF has a main chamber 15 ft in diameter and 45 ft in length, and will simulate ocean depths to 2,250 ft. The system was certified safe for manned operation to full depth on 10 February 1975.

toward cleaner harbors

ship in-port sewers promise cleaner harbor waters

By L. M. WERNIGG
Sanitary Engineering Specialist
Headquarters, NAVFAC
• Alexandria, Va.

The U.S. Navy is well along its way to controlling its share of water pollution in harbors and navigable waters. The transfer of ship sanitary and hotel wastes to shore when ships are in port is a major part of the Navy's pollution abatement effort.

Since this has not been done by the Navy before, new wastewater collection systems have to be built to serve berthed ships.

The most important design parameter for sewer and pump stations is the "peak flow," which is difficult to determine because ships' compliments are reduced in port depending on repairs, lengths of stay, and ship types. Also, outfitting Navy ships with collection, holding, and transfer (CHT) systems is in its initial stages.

Initial standards were developed in collaboration with the Navy Sea Systems Command for design of the ship wastewater collection ashore (SWCA) projects. These standards were based on estimated generation rates with a full ship's compliment and the preliminary collection, holding, and transfer system's design.

However, further development of SWCA systems and refinement of shipboard equipment have made changes in the original design necessary. Modifications were also included to reduce the impact of increased ship discharge rates to provide an effective shore collection system.

After approval of the proposed changes by the Chief of Naval Material and the Chief of Naval Operations, revisions were distributed by letter to Engineering Field Divisions and are being included in the new DM-5 edition.

Revised ship discharge rates, a list of equivalent ships established for the shore collection of ship sewage, the need to deliver ship wastewater to shore at pressure, a new formula to determine peak flow rates, and a partial pressure collection system were incorporated into these changes.

Partial pressure collection systems consist of a single gravity sewer along the length of a pier or wharf, and pressure manifolds centered on each ship's berth. Advantages of the partial pressure collection system over a gravity system include:

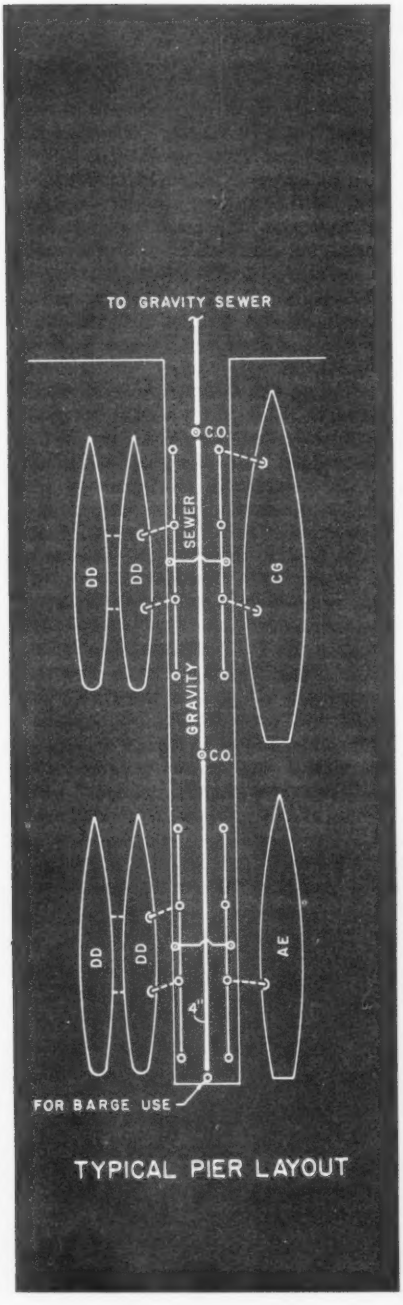
— They are simple and self-regulating.

— They provide large reductions in peak flows. This reduction is accomplished by combining discharges from a ship or ships into a single stream, increasing the head on the ship's pumps.

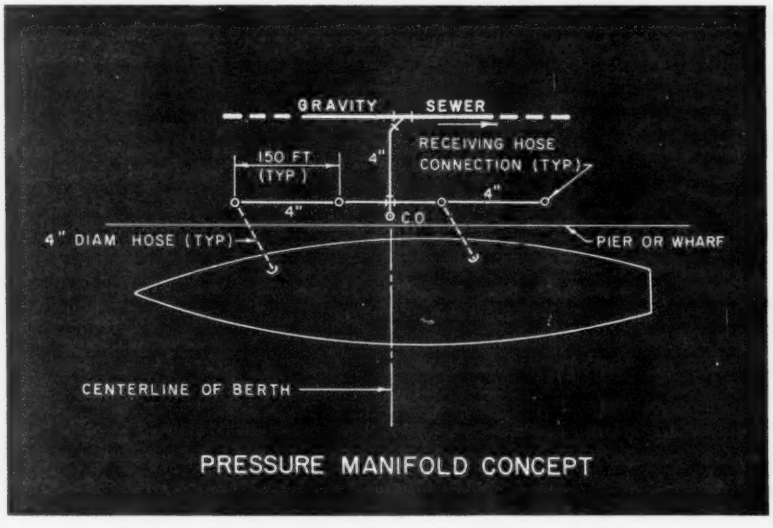
— They provide a high degree of flexibility.

By reducing peak flow, partial pressure systems allow berthing of other ship types than shown on the design berthing plan.

Without pressure manifolds, the gravity sewer could become pressurized and prevent discharge from ships with lower-head pumps at other berths on the same pier.



TYPICAL PIER LAYOUT



PRESSURE MANIFOLD CONCEPT

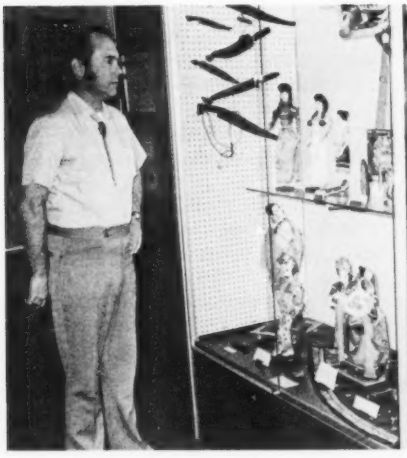
A Home for Heritage

• Port Hueneme, Calif.

The Past

No other building could be more appropriate for the SeaBee Museum than the one it now occupies. Quonset huts are a SeaBee trademark — SeaBees have left quonset huts wherever they have built — or fought.

It is no surprise then to find the museum housed under the semicircular roofs of two interconnected quonset huts just inside the Ventura gate at Naval Construction Battalion Center, Port Hueneme.



Few quonset huts can boast the decor of these two, however, and it is unlikely any quonset hut anywhere shelters so large a portion of SeaBee heritage.

And as unlikely as is the museum's appearance, even more unlikely is the story of its origin.

The museum began almost by default at the end of WWII when returning SeaBees found their eye for souvenirs had substantially exceeded their baggage allowance. Many combat relics gathered on beaches and islands throughout the Pacific — and a few collected in Europe — were abandoned at dockside or stashed in warehouses and forgotten.

Partly to solve the logistics problem presented storing these now unwanted souvenirs and partly to preserve an important part of the fledgling SeaBee's history, then Port Hueneme Commanding Officer, Commodore Beauford Fink, proposed a museum be created to display these artifacts.

Cdr. N. E. Kingsley, officer-in-charge of the USN Training and Distributing Center, supervised the nuts and bolts work of putting the museum together.

The museum opened July 4, 1947 in a building that now serves as the skating rink at Port Hueneme and remained there until 1956. The museum was then transferred to its present location in what was once a part of the SeaBee training center.

But this "solution" to the problem of leftover artifacts soon posed another problem. Since the museum first opened, artifacts ranging from outright junk to valuable articles of historic significance have continued to arrive at the museum at the rate of about 100 a year. All are donated by past and present SeaBees in hopes their "piece of history" will find its way to some display shelf.

The museum remained much as it was until 1968 when a wing was added to house the personal effects and memorabilia of Adm Ben Moreell and other CEC officers. Adm Moreell is the only CEC officer ever promoted to rank of Admiral and is the founder of the SeaBees as an integral part of the Navy.

Among the Moreell wing's prized possessions is one of the original placecards that served as a model for the present CEC insignia. According to the inscription accompanying the placecard, the mother of the present Commander in Chief, Pacific, Mrs. Anne Gaylor, designed the placecards to be used at a 1904 luncheon attended by her husband, then a CEC lieutenant.

Adm M.T. Endicott, then CEC Chief, liked the place cards and the design was adopted as the CEC's familiar oak leaves and acorns insignia.

The Moreell wing, together with the two linked quonset huts, provide some 20,000 square feet of floor space with some 15,000 square feet used for displays.

The SeaBee museum is supported in part by NCBC, Port Hueneme, partly

through the sale of souvenirs, and partly through direct donations. The museum is governed by a board of five senior CEC officers.

The Present

In the often myopic public eye, a museum is a quiet, static, and somewhat solemn edifice where the bones of the past rest to be disturbed only by the gaze and probings of occasional scholars, or by those few with more than a passing interest in the past.

Not so.

Any museum, and the SeaBee museum in particular, is a living, growing entity with a philosophy reflecting the ideas and vigor of its curator and staff, and an almost organic need for sustenance.

The SeaBee museum is changing constantly as new displays are added and new ideas are formed on just what these displays should be. Curator of the museum now is Hark Ketels, a retired CEC lieutenant commander.

The museum owns a tremendous number of artifacts, but the work of sorting through 30 years of collections and selecting, preserving, and mounting those suited for display is a time consuming job.

But several ideas concerning the direction the museum will take have been presented by Ketels and he is beginning the work of reorganizing for the future.

The Future

Museums share a handicap with living things in that needed resources for growth always seem scarcer than demand. A demand exists for several types of needed display items, but sources are scarce.

Ketels said the museum is seeking artifacts depicting the culture of areas where SeaBees have served.

To this end, Ketels said the museum has started — and is trying to expand

— a collection of dolls garbed in the native dress of countries and islands where SeaBees have worked and fought.

Ketels said he already has dolls from Vietnam, Korea, Russia (Yes, SeaBees serve in Russia), Japan, and Holland. Eventually, the curator noted, the museum hopes to display both male and female dolls from about 75 different geographical areas.

Ketels said most of the dolls will be donated — he hopes — and asked those with potential museum piece dolls to send only those between eight and eighteen inches tall.

Other plans for the future include a wing devoted to dioramas, a section devoted to models of CEC research projects, and a military hardware display.

Dioramas will occupy some 4,000 square feet of space and include those already on display, plus several under construction. The most ambitious of these dioramas will contain manniquins and models of equipment used in the new field of underwater construction.

The Navy Civil Engineering Laboratory at Port Hueneme and Underwater Construction Team Two will cooperate on the planned diorama to assure its accuracy.

The military hardware section, Ketels said, is the one needing the most help from donors. Ketels plans to have manniquins dressed in the uniforms of all countries the SeaBees have fought. Also in this section will be examples of the weapons of these enemies.

Weapons are no problem, Ketels said, adding if the hardware the museum owned weren't deactivated, he could put together a sizeable personal army.

Uniforms are a problem. Ketels said he needs uniforms and insignia from the WWII armies and navies of Italy and Germany. He also needs uniforms from North Viet Nam, North Korea, and China. In addition to these items, the museum needs some U.S. Navy clothing items, such as either enlisted or officer gray trousers and hats from WWII.

One desperately needed item is the lightweight pith helmet used in the Pacific during WWII.

The remaining wing of the museum will be devoted to models of research projects involving the CEC and models of CEC hardware.

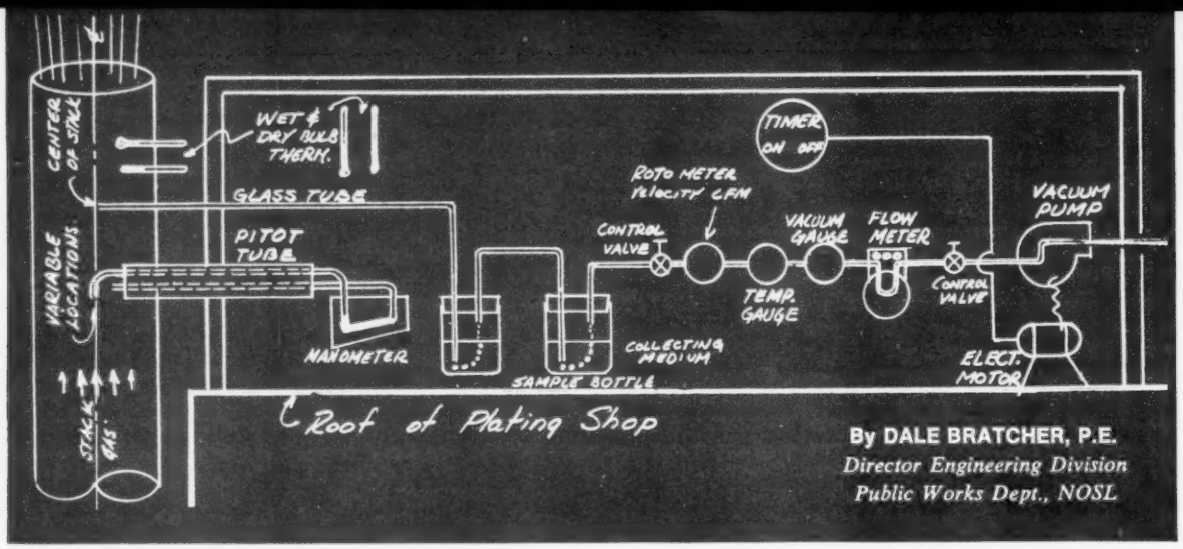
The museum has several models of floating drydocks, ships, and diagrams of port facilities.

One of the most interesting of these is a scaled down version of the nuclear power plant used at McMurdo Sound in Antarctica. The model is functional in that areas representing reactor features — such as the fission pile, turbines and generators — light up when an appropriately identified button next to the model is pushed.

This model and others will have their own wing once the renovation is finished.

But renovation of such a museum is never completed. As SeaBees throughout the world make history, space has to be found in the museum for recording that history.

In the meantime, has anybody seen a pith helmet . . .?



By DALE BRATCHER, P.E.
Director Engineering Division
Public Works Dept., NOSL

STACK SAMPLING IN KENTUCKY

The Naval Ordnance Station at Louisville, Kentucky, now has a contract in progress for reduction of air and water pollutants emitted from the station's plating shop. This will be accomplished by installation of scrubbers on all plating shop exhaust systems and treatment of waste liquids coming from the plating and rinse tanks in this building.

The plating operations generate acid, alkali, and other toxic mists which are picked up by duct hoods and vented from the building interior to the atmosphere. This eliminates environmental health hazards inside the building but causes potential air pollution.

Executive Order 11507 directed all activities to identify potential and existing air and water pollution problems and make provisions for their prevention or control. To meet this requirement, the Naval Ordnance Station planned a facility which, once installed, will lower acid emissions to a level which will comply with present and future air and water pollution regulations.

To determine the size of this planned facility required first a definition of allowable acid emission rates and the measurement of the amount of acid and particulate matter being emitted. To accomplish this, it was necessary to study various air and water pollution regulations and obtain equipment to make sample analysis of the stack exhaust to determine where regulations were being exceeded.

Kentucky Air Pollution Control Laws and the Jefferson County Air Pollution Regulation define noxious acids, fumes and obnoxious or toxic vapors as "air contaminants." These regulations further state the annual geometric mean for suspended particulates in the air shall not exceed 65 micrograms per cubic meter.

At the time of design there were no local regulations for an allowable ambient air concentration nor an allowable emission rate for corrosive particulates.

However, the Kentucky Air Pollution Control Commission indicated future regulations would be similar to those listed by the U. S. Department of Health, Education and Welfare in the book, "A Compilation of Selected Air Pollution Emission Control Regulations and Ordinances." These regulations were used as criteria for designing this facility.

It was found there was very little available technical expertise upon which procedures and requirements could be based. Testing laboratories with the required experience were not available to test the exhaust systems.

Therefore it was necessary to design, order and construct a stack sampling "field lab" and then conduct the test with Public Works Engineering personnel. Samples of the exhaust gases from each of the various plating stacks were passed through this air pollution collecting equipment using standard collecting procedures.

Laboratory analysis of the samples indicated the total emissions would exceed allowable limits, resulting in the need to install scrubbers for each exhaust system. This conclusion was in concurrence with the Jefferson County Air Pollution Control District requirements.

In addition to the air pollution problem, it was necessary to correct a potential water pollution problem resulting from disposal of plating solutions. To correct this problem the most economical solution was to provide a large treatment tank with an adjacent chrome reduction unit and pH adjustment units.

Future plans call for the addition of reserve osmosis equipment to this system which will make it possible to recycle much of the water.

After the project was approved for design, meetings were held at the Louisville Naval Ordnance Station with the A&E, the local Air Pollution Board and the EPA to assure required design standards would be provided.

The project has provisions for complete new ventilating and stack emission control systems. This includes alterations to the plating shop duct system, new wet scrubbers, supporting structures for the new duct and scrubbers plus a push system on the front of each plating tank to assure capture of the fumes.

Various treatment tanks and related equipment for the water treatment system will be constructed on the exterior of the building. Provision for a new electrical transformer and corresponding electrical revision complete the project scope.

The project is now under contract to a local mechanical contractor with completion scheduled early this year. Ltjg J. G. Masler is the ROICC and Ens R. Johnson is the AROICC. Louis Richie, Civil Engineer of the Naval Ordnance Station Public Works Engineering Division is the Contract Administrator for this facility.

TECHNICAL NOTES

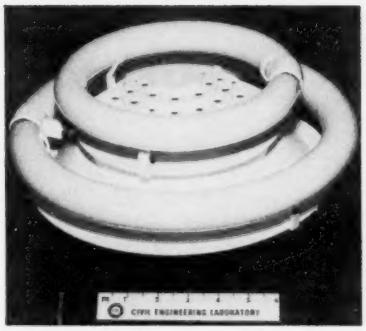
Improving Competence

Many activities have recently become concerned about the level of trade knowledge and competence of their craftsmen and mechanics since a large number of the more experienced personnel are retiring.

Formal apprentice and trade theory training programs are nonexistent at most of our naval activities because of funding and ceiling restraints. Most shop management personnel feel a formal training program is desirable, but with the increasing backlog of work, time does not permit removing men from a job to attend weekly training sessions.

One possible answer is use of the NAVFAC Technical Training Center.

Contact: NAVFAC Technical Training Center, Navy Public Works Center, Norfolk, VA. 23511.



Shedding a new light...

CEL tests of a screw-in fluorescent light unit showed that it will save two thirds of the energy required by incandescent lamps with an equivalent light output. The manufacturer's further claim for the lumen output and energy consumption were also verified by the tests.

CEL recommends that these fluorescent lamps be substituted for the incandescent lamps for indoor use only. The weakest components of these units are the starters, lamp holders, and threaded screw bases. They are designed for indoor use, and cannot withstand severe environmental conditions such as low temperatures, sea air, high humidity, and wind or vibration.

An estimated "payback" period of four years was computed for replacing an incandescent lamp with the fluorescent unit.

Contact: Dr. Kwang-Ta Huang, Code L62, Civil Engineering Laboratory, Autovon 360-4207.

...but would 'Teddy' approve?

To combat rising operating costs the Naval Education and Training Command, Pensacola, Fla., has acquired 103 jeep-like Postal Service delivery vehicles. The "little white fleet" will stretch the Navy's operating and maintenance dollar through improved gas mileage, simple maintenance, and a readily available parts supply through the nation-wide dealer service now supporting the Postal Service.

There has been a favorable reception to the new vehicles. Many installations are using them for security patrol, messenger service, and other jobs of low passenger requirement.

Contact: H.L. Broughton, NETBRAN, Southern Division, Naval Facilities Engineering Command, Charleston, S. C., Code 12, Autovon 922-3645.

Transform ideas into savings

There are many locations where large transformers are dedicated to seasonal loads, and are therefore unloaded for several months each year. If the primary voltage to transformers with seasonal loads is removed during the time that the transformer is unloaded, a cost and energy savings can be realized.

The potential savings for a given period of time for a specific transformer can be computed. This needs to be weighed against the labor and/or other expenses involved in disconnecting and reconnecting the primary voltage source to the transformer.

The power consumed in the exitation of a transformer is from 0.4 to 0.33 percent of the transformer's power rating. At an estimated cost of 3c/KWH for electrical power, the exitation of a transformer would cost 7.5c/KW a month (this would amount to $112.50 a month for a 1500 KVA transformer; less, of course, for smaller transformers.) This energy loss and cost will be the same with the transformer unloaded as it is when the transformer is supplying rated power.

Disconnecting the primary voltage of a transformer is the same as storing the transformer on site, which is common practice. No degradation of the transformer's quality should occur if the unit is properly sealed. Prior to restoring the primary voltage, the quality of the transformer oil can be checked to assure that moisture has not entered the transformer's enclosure.

CEL Contact: David E. Weems, Autovon 360-5778; (805) 982-5778.

Vinyl chloride spray banned

Vinyl chloride is a substance utilized in making polyvinylchloride and has been used in aerosol cans.

The Environmental Protection Agency issued an emergency suspension order on vinyl chloride based on evidence of severe effects on certain vital organs, including brain damage and liver cancer. Label registration for usage in homes, food handling areas, hospitals and in enclosed spaces was suspended.

Aerosols containing pesticides against roaches, ants, wasps, hornets, fleas, lice or ticks, and aerosol disinfectants, mothproofers, sanitizers or repellants may be found to contain vinyl chloride. BUMED has advised that the use of such aerosols is prohibited and should not be purchased for home use, nor should they be sold at Navy Exchange stores and garden shops.

Contact: A. Branan, Code 10A.1, Atlantic Division, Norfolk, Va. Autovon 690-7121.

Continued From Preceding Page

As noted in the previous Public Works Technical Notes *(The Navy Civil Engineer, Winter, 1974)* stainless steels are subject to corrosion, particularly when exposed to marine environments.

The corrosion of stainless steels can be further accelerated by improper fabrication techniques. Welding is a fabrication technique which often leads to rapid and catastrophic failure of stainless steel components. These failures can be identified by rapid corrosion in narrow zones adjacent to the weld bead.

Since weldment attack of stainless steels is usually rapid and intergranular, the *reclamation* of corroded parts by heat treatment is usually *not* successful. Only a proper combination of material selection and fabrication can eliminate this type of attack from stainless steel weldments.

The cause of weldment attack is the formation of chromium carbides in the stainless steel when it is held at a temperature between 800°F and 1600°F. The chromium — necessary for corrosion resistance — is thereby effectively removed from the steel, thus making the steel susceptible to quick corrosion. This type of attack can be avoided by selecting grades of stainless steel which are resistant to carbide precipitation or by proper heat treatment.

Those stainless steels which are inherently resistant to carbide formation are the low carbon grades (as identified by the letter L following the alloy number, e.g., 304L) and the stabilized grades such as 321 or 347. Other grades of stainless steels which have been exposed to temperatures in the 800°F to 1600°F range can be heat treated to restore their original corrosion resistance. This heat treatment is accomplished by heating to 1900°F to 2100°F followed by rapid cooling.

CEL Contact: J.F. Jenkins, Autovon 360-4797 (805) 982-4797.

Tanks a lot

Drain off a gallon of water from the bottom of hot water tanks (housing) two or three times a year. This will flush out mineral deposits and increase the efficiency of the hot water tank, and conserve energy.

Also check the thermostat settings on all hot water tanks. Reduce the thermostat settings to appropriate levels: approximately 110°F for administrative washrooms; approximately 130°F to 140°F for BEQ/BOQ and housing; 180°F for messhalls, etc. This could provide large energy/fuel savings.

An additional value in limiting the temperature of water to under 140°F is the protection of copper pipe and tubing. *(See article on "Prevention of rapid failure of copper piping"* in this section.

A fitting finish for hangar floors

In a study directed toward increasing the amount of light reflected underneath aircraft, the floor of an aircraft maintenance hangar at the Naval Air Station Oceana, Va. was painted white with three different urethane floor coating systems. The walls of the hangar were also coated to a height of seven feet above the floor with white TT-E-489.

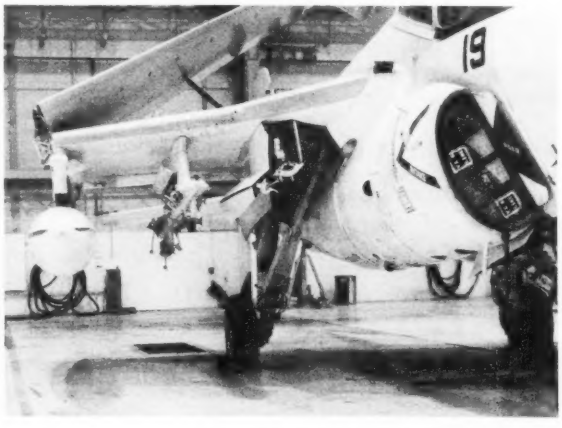
The coatings were applied to the east bay of the hangar while the floor of the identical west bay of this hangar remained unpainted. Results for up to two years after applying the coatings are most promising. The amount of light reflected underneath the aircraft is increased notably by the use of a reflective coating system as shown in the accompanying photographs. While there have been some minor problems with slip resistance and scraping of the coatings from the concrete floor, these are not serious at this time.

Human Factors Engineering Studies conducted by the Naval Air Safety Center, initially after the coatings were applied and approximately two years after application, indicate that aircraft maintenance personnel are enthusiastic about the reflective character of the floor coatings. While painting hangar floors results in additional expense, fewer lights should be required for adequately lighting the hangar, resulting in a saving of energy. NAS Oceana was sufficiently pleased with the results that they have recently coated the floor of their new F-14 hangar with the heavy duty urethane system.

Contact: Dr. Robert L. Alumbaugh, Code L52, Autovon 360-4679.

BEFORE

AFTER



WORKS NOTES

Continued On Following Page

Old King Sol at work

A solar water heater has been manufactured and is now marketed in Puerto Rico. As an experiment, the company has installed this tank on a roof of a housing development at Naval Station Roosevelt Roads.

The tank was installed in mid-November and the auxiliary electric coil was set at 135°F. A 50% reduction in electricity used to heat the hot water has been recorded.

Presently, the initial cost of the system is $350 installed. With this cost, the payback time would be 4.4 years allowing $90 for replacement of the conventional heater. Consequently, wider use of the solar energy system is not anticipated.

However, use of the system is being studied for base facilities which could use the heater without the auxiliary electric coil, i.e., use it only during sunlight hours on buildings such as the gymnasium, the school, and the library.

Contact: J. B. Pitman, Jr., Naval Station Roosevelt Roads, P.R. or J. L. Leimanis, Code 10133, HQNAVFAC, Alexandria, Va; Autovon 221-8182.

Preserving your pipes

Copper pipe and tubing have become the material of choice for the small diameter portions of potable water distribution systems in many areas. This is due to the low cost of installation of these systems and the long life of this material in most applications. However, when conditions are right (or wrong), copper pipe and tubing can be subject to rapid failure. While rapid failure of copper tubing can be due to many factors, two factors have resulted in many recent similar failures in several Navy installations.

The first, and most easily diagnosed cause of failure, is excessively high temperatures in hot water systems, particularly in galleys and in domestic service. This cause of failure can be identified by failure of piping only in hot water systems with excessively high temperatures and not in adjacent cold water or normally heated hot water systems. In most cases, limiting the maximum water temperature to 140°F will eliminate or greatly reduce the severity of this attack. If water temperatures in excess of 140° are required, then the only practical solution to the problem is substitution of 90-10 cupro-nickel (90% copper — 10% nickel) tubing and fittings in the portions of the system where high temperatures are required.

The second common cause of rapid failure of copper pipe or tubing is more subtle and is harder to diagnose and cure. In this case, dissolved gasses in the water supply are the cause of failure. This results in cavitation attack which normally occurs downstream of an obstruction or other turbulence-inducing condition in the system, such as elbows, corrugated flexible connections, reductions in tube size, etc. If failure occurs in a system in these locations, a complex water analysis is necessary to verify the exact cause of failure. Analysis should include dissolved gasses, particularly oxygen and carbon dioxide.

If the oxygen content is above 10 ppm and/or the carbon dioxide content is above 2ppm, then these gasses are the most likely cause of failure. Methods for removal of these gasses or counteracting of their effect by water treatment will be dependent on the exact composition of the water and should be determined by a water treatment expert.

Contact: *J. F. Jenkins, Autovon 360-4797; (805) 982-4797*

Are your guys reliable?

Navy shore activities use wire ropes and plastic rods (where wire ropes are inappropriate) extensively to guy slender structures such as towers, antennas, poles and stacks.

Because failure of these guys can result in a catastrophic failure of the structures, the Civil Engineering Laboratory conducted tests on coated and uncoated specimens. CEL also conducted a survey of ten field activities to learn of their experience with epoxy-coated fiberglass reinforced plastic guy rods.

the tests revealed that specimens coated before exposure deteriorated less rapidly that post-treated specimens. Fiberglass reinforced plastic guys deteriorated more rapidly in tropical climates than in temperate climates. The plastic guys generally retain most of their tensile strength upon weathering up to ten years, even though their protective coatings are badly deteriorated; and the end connector is the weakest component of the guy rod.

Based on the test results, it is recommended that wire rope and plastic guys be coated *before* installation. Also, it usually is more economical to replace small diameter (less than one inch) wire rope and plastics guys instead of recoating or attempting corrective maintenance of the original guys in the field.

Spring cleanup

Activities are reminded now that the winter is over, it a good time to perform maintenance to pavement shoulders, particularly where unusually severe cold wet weather occurred this year. Shoulders should be kept smooth and graded so that water drains away from the pavement toward the ditch.

Generally, repairs involve leveling of ruts and washes, filling of low areas and cutting down high shoulders.

Refer to NAVFAC Manual MO-102, Maintenance of Pavements, dated July 1970.

Hit it in the head?

There are several plant growth regulators on the market today which effectively retard grass (turf) growth However, in the Navy's grounds maintenance program, use of growth regulators is limited because of the high cost per acre for chemicals ($40-$50). Unless your per acre mowing cost exceeds $60-$70 annually, the use of growth retardants is not normally recommended.

Growth retardants are beneficial when costs exceed the above figures for areas such as grass covered bunkers, steep slopes, drainage banks, berms, etc. In addition, growth regulators are most effective when there are pure stands of one species of grass.

When the turf contains more than one grass species, this usually results in a ragged appearance as each species is affected differently by the chemical application. Selective herbicides can be added to growth regulators for the control of broad-leafed weeds such as dandelion, buttercup and plantain.

Contact: G. L. Sims, Atlantic Division, NAVFAC, Norfolk, Va., Code 10A, Autovon 690-7121.

Efflorescence from paneling?

White salts suddenly appeared on paneling that had been installed on the interior side of a brick wall of a building at the Naval Station, Norfolk, Va.

Since the room in question was air conditioned, it was judged that moisture vapor being drawn into the building by the air conditioning was contributing to the salt formation on the panel surface. Similar effects have been noted on interior masonry walls where efflorescence is caused by moisture migration.

Small samples of the paneling and salts were sent to CEL for analysis. Elemental and instrumental analysis showed that the salts forwarded and those extracted from the paneling with water were identical. Further analysis suggested that the salts were probably diammonium phosphate and sodium metaborate, both of which are used as fire retardant treatments for plywood paneling.

The solution to the problem therefore involved inhibiting the passage of the moisture vapor through the wall and the paneling. It was recommended either that the exterior of the building be painted or, in this case, that the paneling be removed and a moisture vapor barrier be installed between the wall and the paneling.

Contact: Dr. Robert L. Alumbaugh, Code L52, Autovon 360-4679.

To mix or not

The use of the ready-mix joint compound offers advantages for facilities engineering maintenance and repair type work involving numerous small jobs in different locations.

Use of the ready-mix compound can save substantial time and effort since it eliminates the need for mixing the powder and water at the start of the job and the clean-up at the completion of the job.

Only the amount of ready-mix compound immediately required need be removed from the can; if the can is resealed, the remaining compound can be used at a later time.

Major manufacturers of drywall materials market ready-to-use joint compounds in one- and five gallon containers. The decision as to whether job-mixed or ready-mix compound is to be used is normally left to the preference of the contractor.

Manufacturers state that drywall contractors are divided about equally as to which compound they use.

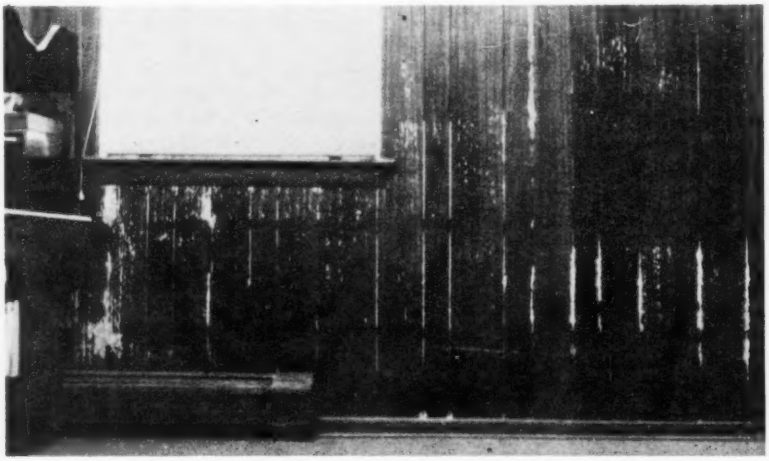
Contact: A. S. Gallup, LANTNAVFACENGCOM, Code 102A, Autovon 690-7121.

Tar, asphalt don't mix

Most roof coating and cements are either tar or asphalt based. Both types are well suited to the job they're supposed to do, but they should never be mixed on the same roof, because tar and asphalt are basically incompatible.

This has been proven by conventional compatibility tests like those used by all formulators of hot melts and other mixtures, as well as by special heat, ultra-violet, outdoor exposure and other tests by roofing experts. Practical field experience of roofing materials also verifies the incompatibility of tar and asphalt.

Contact: A.S. Gallup, Atlantic Division, Norfolk, Va., Code 102A, Autovon 690-7121.



Spackle sparkle

A suggested technique of using a spackling paste and damp cloth to remove marks from drywall prior to painting has been evaluated.

This method was found effective in removing lipstick, crayon, pencil and some "magic" markers from painted drywall surfaces. However, a number of "magic" markers, ball point pens, and spray paints left marks which were not effectively removed by this technique.

Further, it was found that a typical abrasive type cleaner such as cake grit soap was as effective as the spackling paste; and detergent type cleaners were also found effective.

While the use of the spackling paste to remove marks may or may not result in cost savings, it has been found effective in many instances and involves the use of a material already available and commonly used by painters.

Contact: A.S. Gallup, LANTNAVFACENGCOM, Code 102A, Autovon 690-7121.

It is said there's always a way to build a better mousetrap and this section of The Navy Civil Engineer is designed for ready exchange of better ways to perform Public Works functions. Readers who desire additional information are urged to contact the contributor directly for specific details. Contributions are urged from field installations and should be directed to John S. Biggs, PW Technical Coordinator, Code 1013, Headquarters, Naval Facilities Engineering Command, 200 Stovall Street, Alexandria, VA 22332; Autovon 221-8182 or (703) 325-8182. Coordinator for RDT&E subjects is Eugene H. Early, Code L03C, Civil Engineering Laboratory, Naval Construction Battalion Center, Port Hueneme, CA 93043; Autovon 360-4070 or (805) 982-4070.

Afield and afishin' at Meridian

By KEITH D. LANGE
Staff Conservationist
Southern Division, NAVFAC
and
WILLIAM E. FRAZIER
Station Forester, NAS Meridian

• Meridian, Miss.

The development of a viable outdoor recreation program at Naval Air Station, Meridian, Mississippi, has evolved through the combined efforts of many people. The Commanding Officer, Recreation Director, Public Works Officer, Station Forester, Station Seabees, and many other individuals have all contributed significantly in meeting the increasing demand for recreation.

The success of their efforts is confirmed in part by the fact this station has rated high in the Navy and DOD Annual Conservation Award programs in past years. Conservation, combined with judicious use, has been a cornerstone in the development of natural resources — forests, soil, water, fish, wildlife and other gifts of nature.

Many projects are undertaken each year on this 6,600-acre military activity to further benefit recreation. Facilities for organized sports such as baseball, tennis, basketball, and golf are constantly upgraded and new facilities are added every year. Picnic areas and playgrounds are numerous, and more are planned to keep pace with demand.

The station fish and wildlife program, which includes lakes and ponds occupying 156 acres and wildlife food plots comprising a total annual planting area of 207 acres, is under the management of William Frazier, Station Forester, and his two assistants.

Technical guidance in this program is provided by cooperating biologists of the U.S. Fish and Wildlife Service and the Mississippi Game and Fish Commission. Habitat improvements are accomplished in different ways and supplemental food plots have allowed deer, quail, turkey, dove, squirrel, and rabbit to increase in numbers despite ever-increasing hunting pressure.

Habitat improvement includes prescribed burning of forested areas, which is closely coordinated with the station long range forest management program. Stocking, feeding, and the population control of trash fish have steadily improved fishing. Construction of new ponds continues under the Self-Help Program.

Under the direction of Capt. T. L. Jackson, Commanding Officer, these activities have received the stimulus necessary to bring programs to fruition. He has provided additional funds to supplement those received from the sale of hunting and fishing permits, and was instrumental in the assignment of a full-time game warden.

Game warden, Chief Gerald Theriault was recruited from the station security force. His law enforcement training and an abiding interest in wildlife are real assets in protecting resources. He monitors fishing and hunting activities and patrols at odd hours and on weekends to reduce vandalism and trespass.

Station Game Warden checks the license of a hunter at NAS Meridian.

The Public Works Officer, LCdr. J. B. Clayton, has assigned a Seabee equipment operator to assist Theriault full-time; and for occasional special projects, has put the entire Seabee Division at his disposal. Their heavy equipment and special expertise have made many Self-Help improvements in the recreation program and in conservation of natural resources.

Since economics is the eye-of-the-needle through which all recreational facilities must pass, and since the Navy provides no funds for fish and wildlife programs, funding must be obtained elsewhere. Station personnel have actively complied with a recent Navy instruction which requires sharing benefits of the program with the public, and charging fees for the privilege of hunting and fishing on the station.

Proceeds from the sale of these permits go directly into the development and maintenance of the station's program. If funds are not used one year, they can be carried over into the next. Naval Air Station, Meridian has experienced tangible results from these additional dollars. The directive states fees charged cannot be included in membership fees or dues charged Rod and Gun Club or other conservation organization members since funds from fee collections help make the program self-sustaining.

Fees charged at NAS Meridian are reasonable, with Special Services handling the sale of permits at a place convenient to all who want them. In FY75, $2,664 was collected. This sum, though minimal by some standards, has been put to good use to further improve the fish and wildlife habitat.

Word of sportsmen's success has rapidly accelerated the sale of permits, and increased revenues are anticipated.

SPEAKING

One of the greatest dangers we all face, when working within a large bureaucratic system, is the tendency to become enmeshed, shrouded and thoroughly insulated by S.O.P. To a greater or lesser degree this phenomenon (which also passes as "shoe clerkism") infects us all; no one is immune to the disease.

The virus occurs in two principal strains, one which covers the broad spectrum of taking cover behind existing directives, criteria and standards, and the second which involves the failure to take appropriate concurrent actions where such actions are clearly advantageous and necessary.

As a word of explanation before developing the foregoing thoughts, it is accepted that the need for disciplined processing of an organization's work is obvious. In NAVFAC's massive role of facilities planning, acquisition and maintenance of the Navy's Shore Establishment, the various systems we've developed through the years are essential. Our business would be total chaos without the disciplines of the Shore Installation Facilities Planning and Programming System, the MILCON Planning, Programming and Construction Systems and the various facilities management systems (maintenance, transportation, utilites and housing management.

Notwithstanding the framework of order and discipline which our systems bring to us, there must be room for flexibility and individual initiative.

It is this point with which I am concerned.

On the issue of needlessly taking cover behind existing criteria, standards, et al, I find this to be one of the most discouraging of all bureaucratic behavior patterns. We must do more than treat our facilities problems in a completely dogmatic fashion. Nothing disturbs me or our customers more quickly and thoroughly than to have a problem disapproved or recommended for negative action on the basis of a mere technicality.

"... I haven't been gigged lately ... My staff must be asleep!"

FROM TOPSIDE

A. W. WALTON, JR.
Rear Admiral, CEC, USN
Commander, Atlantic Division
Naval Facilities Engineering Command

For example, one of our activity public works officers may have struggled with a difficult facilities problem requiring a modest bit of alteration or construction to solve. The resulting minor construction project, upon review by the Atlantic Division, is estimated to cost slightly over $50 thousand which prices it into the MILCON program range and our resulting endorsement so states.

It is at this point that I want my people to take that extra step of the telephone call to the activity PWO to work out the problem, since it is obvious that neither of us wants either the MILCON solution or the extra paperwork of kicking off a project rewrite. Yet, by the system, our negative endorsement is perfectly allowable.

The idea of taking concurrent actions is certainly not new. Perhaps the best continuing example is the concurrent design effort and the programming/authorization/appropriation actions in conjunction with a given MILCON year. Still, there are numerous other situations whereby requisite approvals, apportionments, and similar actions can be pursued concurrently thereby reducing the time and often the cost of project execution as well as providing a quantum improvement in our support to the fleet.

The principal factor implied in concurrent action is time. In the Atlantic Division, time is critical when we think of Iceland with its limited construction season and when we think of several other foreign countries with their unbelievable inflation rates. Here again, our people cannot afford to react strictly "by the book." One positive example of how we have effectively used unusual concurrent action is in the FY 1975 housing program at the Naval Station, Keflavik, Iceland.

Well before the final scope in terms of the number of units which could be built within a fixed dollar limitation had been set, we were negotiating with the contractor and had authorized him to proceed with advance procurement of some long lead time materials. This, plus other extraordinary actions, enabled us to get a leg up on the schedule and we will squeeze the last bit of utility out of the Iceland construction season this year.

The additional effort involved in "stretching" ourselves to achieve concurrent action may be significant but I expect it to be applied. The cases which warrant such stretching are not always easy to discern but I expect the attempt to be made. I prefer to err on the side of too much rather than too little, when it comes to the exraordinary effort which may be necessary to accommodate, to adjust within or around the prescribed system. Moreover, the alert manager will not be content to merely solve the symptoms of a problem by taking near-identical extra steps frequently.

Sooner or later, the thought will occur that it is the system that needs correction and no the individual action precipitated by the system. At this point, I expect my LANTDIV managers to attack the system and to be a catalyst to create necessary changes to the system.

The thoughts I have expressed here have become firmly engrained within my personal management philosophy. I have made this speech countless times to my staff. As they well know, I get very nervous when things are peaceful and happening by the numbers. One of the satisfactions I derive from my job is being taken to task for having moved too quickly (in reference to the normal system) in the execution of one of our jobs when I know we have found a better way.

It doesn't happen nearly enough.

The management philosophy at stake is the very essence of governmental management style. We cannot be content with an array of managers who blindly follow systems dogma. Our managers must be aware of all possible short cuts and legitimate sequences of action.

They must be extremely sensitive to and aware of the needs of those that they serve and must know when routine action will not suffice. They must possess the skill and imagination to plan extraordinary action and, probably most important of all, the courage to implement that action.

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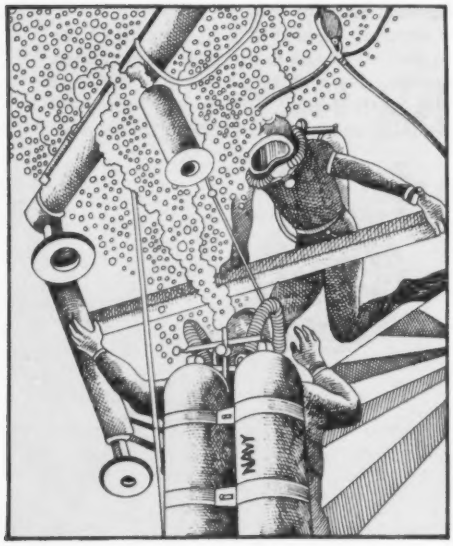

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